SOAP

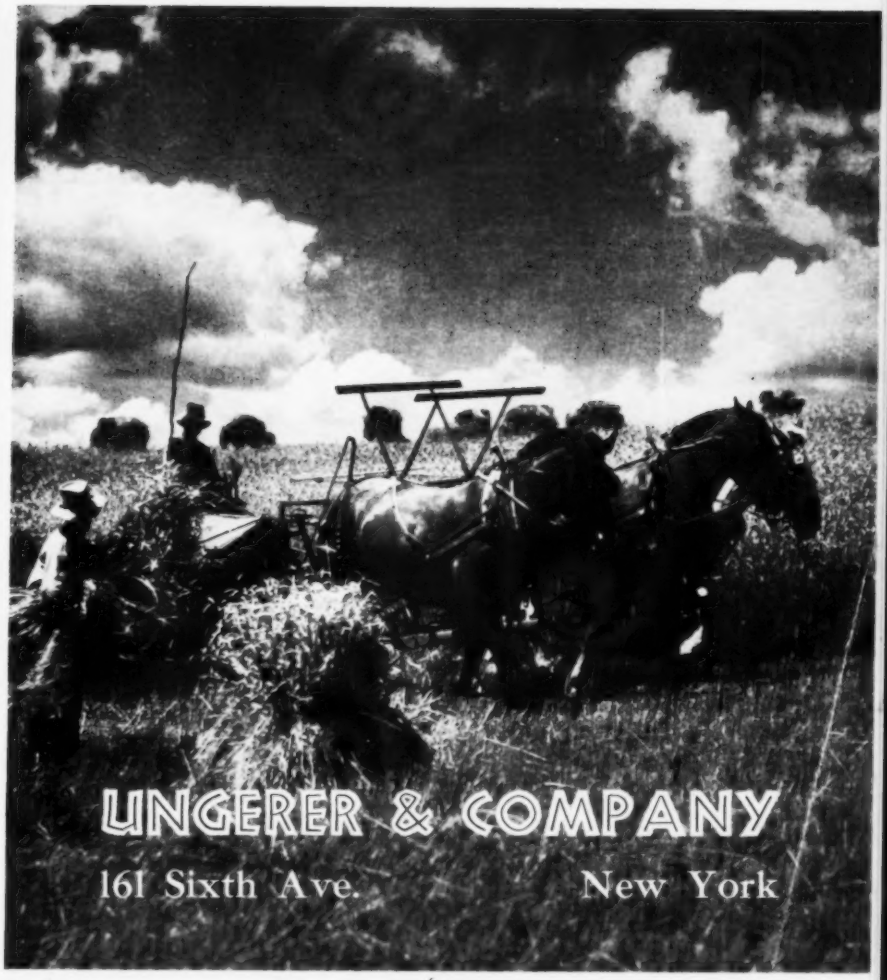
SANITARY CHEMICALS

...VEST...

...PERT... of UNGERER ...

...everyday ways ... formed ... perfuming ... design which is involved ... under present spirit ... conditions . . . Guiding us ... supplying our customers ... with the right perfume for ... the right purpose . . . whether ... the products required be ... essential oils, aromatic ... chemicals, or perfume spe... cialties, the test of time has ... proved that it pays to . . .

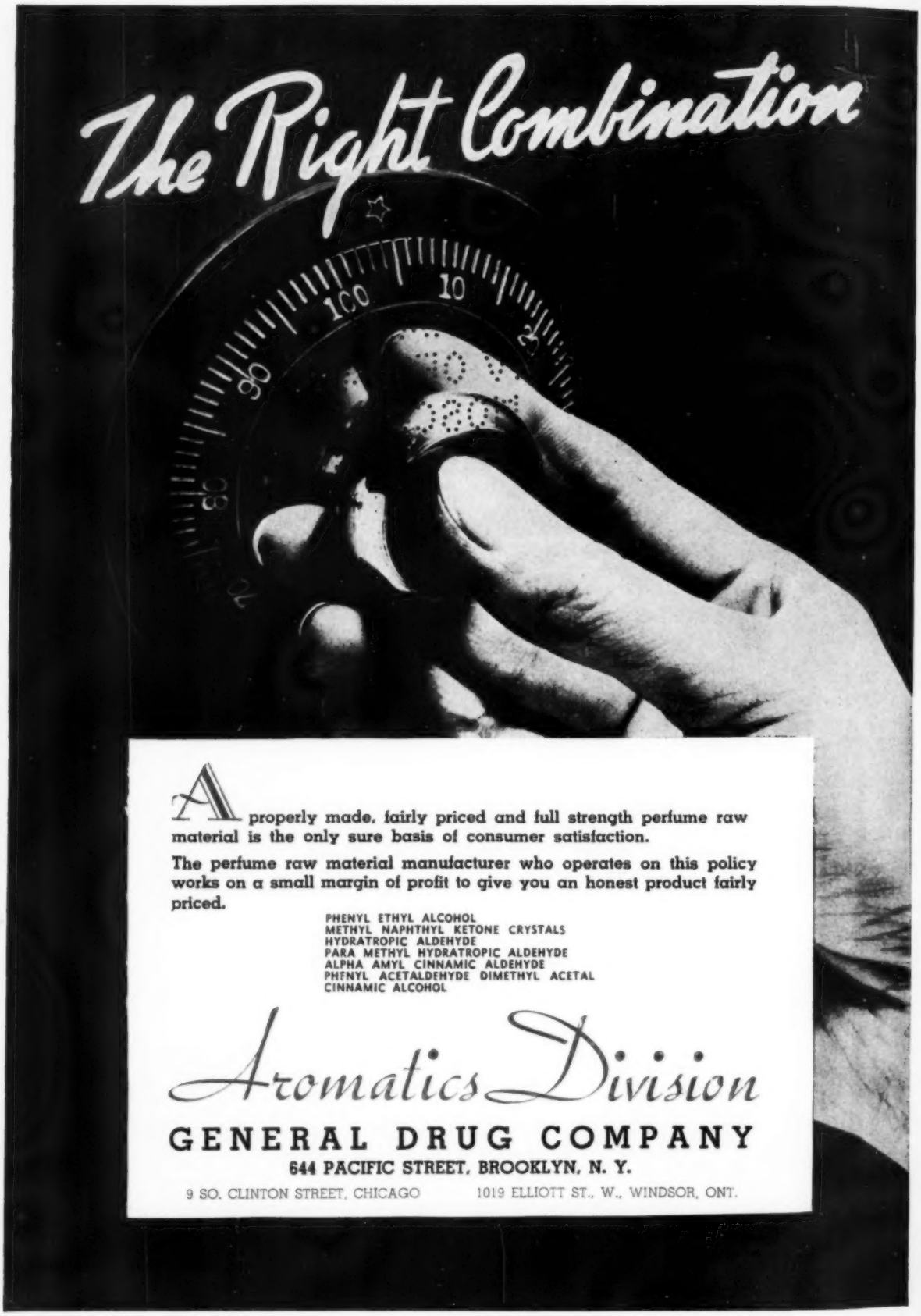
. . . Consult UNGERER!



UNGERER & COMPANY

161 Sixth Ave. New York

November 1942



A properly made, fairly priced and full strength perfume raw material is the only sure basis of consumer satisfaction.

The perfume raw material manufacturer who operates on this policy works on a small margin of profit to give you an honest product fairly priced.

PHENYL ETHYL ALCOHOL
METHYL NAPHTHYL KETONE CRYSTALS
HYDRATROPIC ALDEHYDE
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We don't claim to possess any mystic powers. We don't have the gift of predicting the future. Our guess is, however, that the post-war period will see a big boom in demand for all kinds of sanitary chemicals. In the meantime we are concerned with the present. We are pledged to keep our jobbers going. Of course, the lessons we are all learning during the war, will help us all when the peace comes. Right now we are concentrating on your needs of the day.

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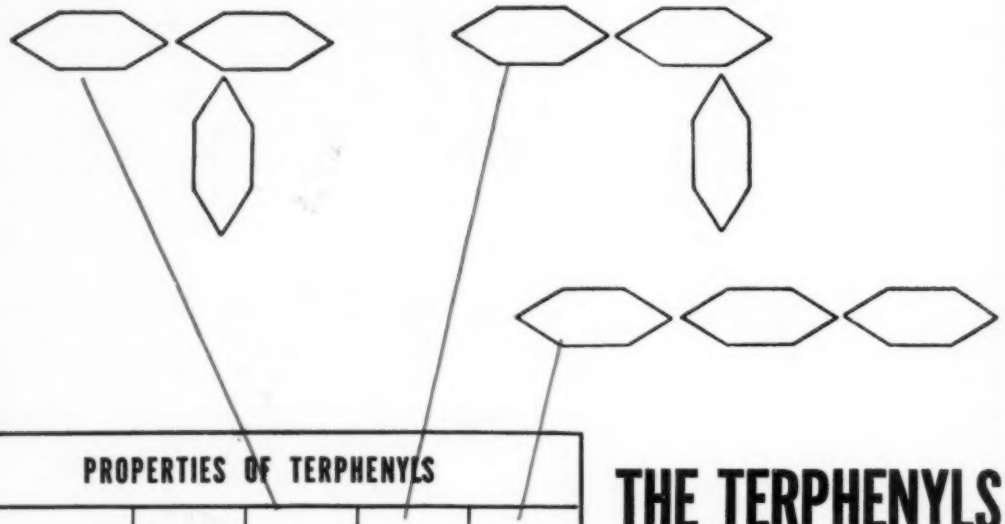

PROPERTIES OF TERPHENYLS

	Mixed Isomeric Terphenyls	ORTHO	META	PARA
Color (NPA)	4–5	< 3.0	2.2–4.2	0–1.25
Density (g./cc.)	1.133	1.14	1.164	1.236
Melting Point Begins to soften Completely liquid	 60° C 140° C	 35° C 56° C	 75° C 85° C	 200° C 215° C
Solidification First crystals Hold point	 60–65° C 140–145° C	 ——— < 54° C	 < 90° C 83–85° C	 209–213° C ———
Distillation Range D-20 (Corr.)	364–418° C	330–350° C	370–378° C	381–388° C
Flash point	191° C	171° C	207° C	207° C
Flame point	238° C	193° C	229° C	238° C
Viscosity at 210° F (Saybolt Univ. Sec.)	———	40	39.3	29
Electrical properties Dielectric constant Resistivity (ohm/cm3) 100° C 155° C 250° C	 2.58 140,000x10⁹ 550x10⁹ ———	 2.54 8,200x10⁹ ——— ———	 2.62 2,600x10⁹ ——— ———	 ——— ——— ——— 30x10⁹

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can these new, high molecular weight, aromatic hydrocarbons help YOU?

The Terphenyls have only recently been made available commercially. They are offered as a mixture and as relatively pure individual isomers . . . at prices which may make it well worth your while to investigate their possible usefulness in your products or processes.

As high molecular weight aromatic hydrocarbons they open up new opportunities for chemical synthesis in the fields of dyes, drugs and organic chemicals. They may be halogenated, sulfonated or nitrated, and the sulfonates may be hydroxylated in the manner usual for aromatic radicals. Aliphatic radicals may be added by Friedel-Crafts reaction.

For experimental samples and further technical data, mail the coupon below. MONSANTO CHEMICAL COMPANY, Phosphate Division, St. Louis 4, Missouri.

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☐ mixed, isomeric terphenyls
☐ ortho terphenyl ☐ meta terphenyl ☐ para terphenyl.

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Firm_____
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Volume XIX Number 11

SOAP and SANITARY CHEMICALS

Reg. U. S. Pat. Office

NOVEMBER 1943

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SANITARY Products Section, which forms a part of every issue of SOAP, Begins on page 75.

MEMBER AUDIT BUREAU OF CIRCULATIONS

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254 WEST 31st STREET NEW YORK, N. Y.

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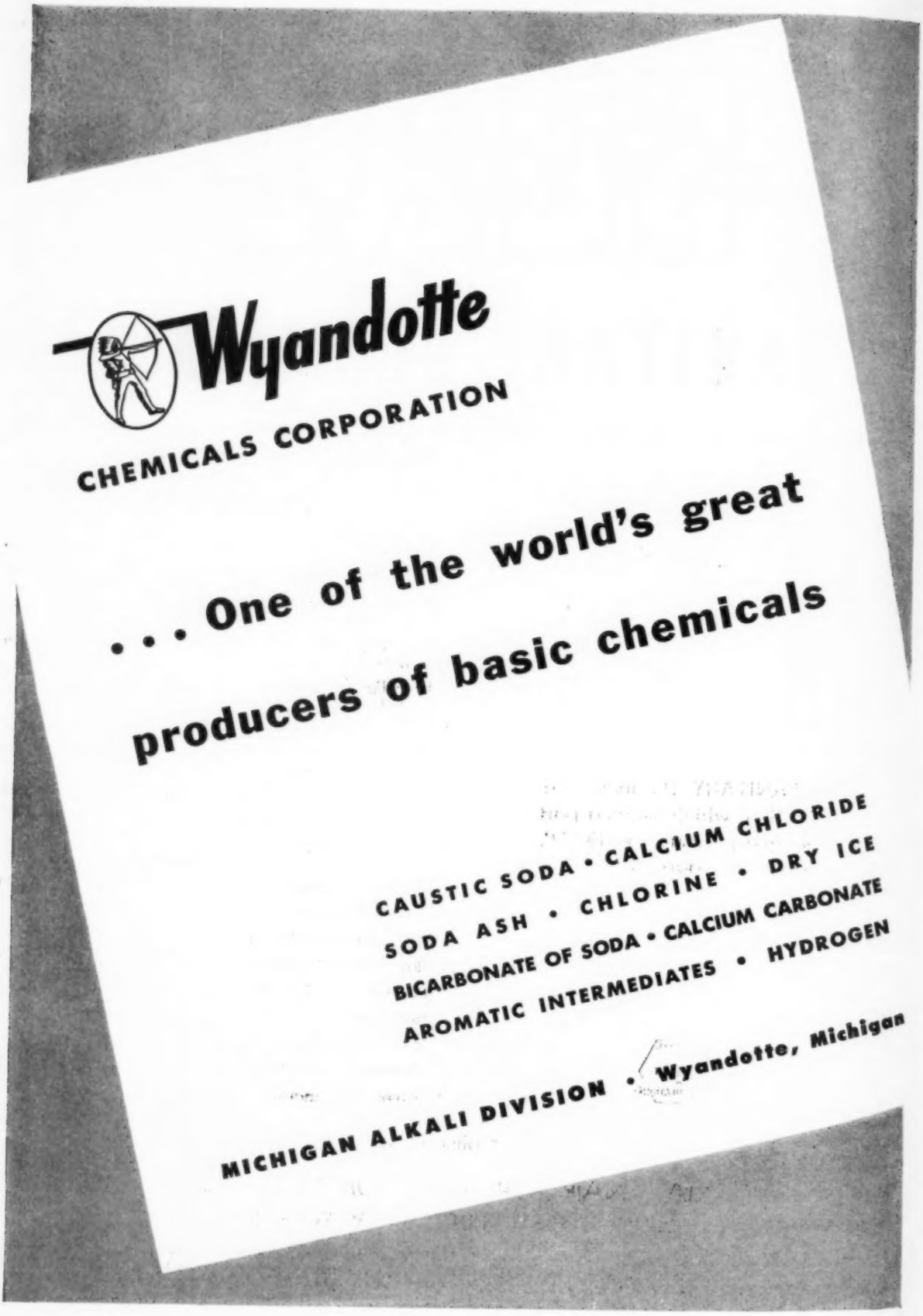
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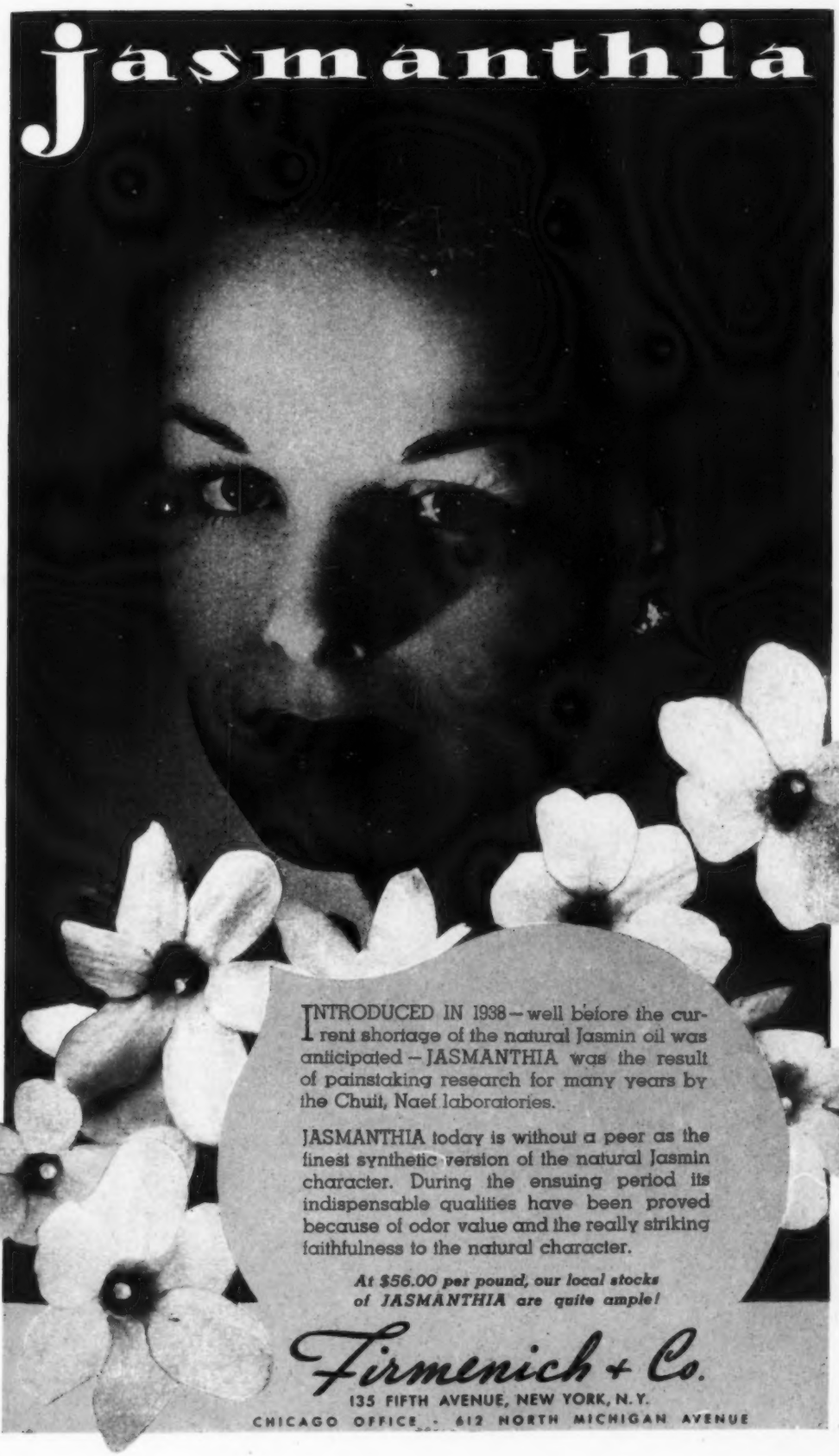

INTRODUCED IN 1938—well before the current shortage of the natural Jasmin oil was anticipated—JASMANTHIA was the result of painstaking research for many years by the Chuit, Naef laboratories.

JASMANTHIA today is without a peer as the finest synthetic version of the natural Jasmin character. During the ensuing period its indispensable qualities have been proved because of odor value and the really striking faithfulness to the natural character.

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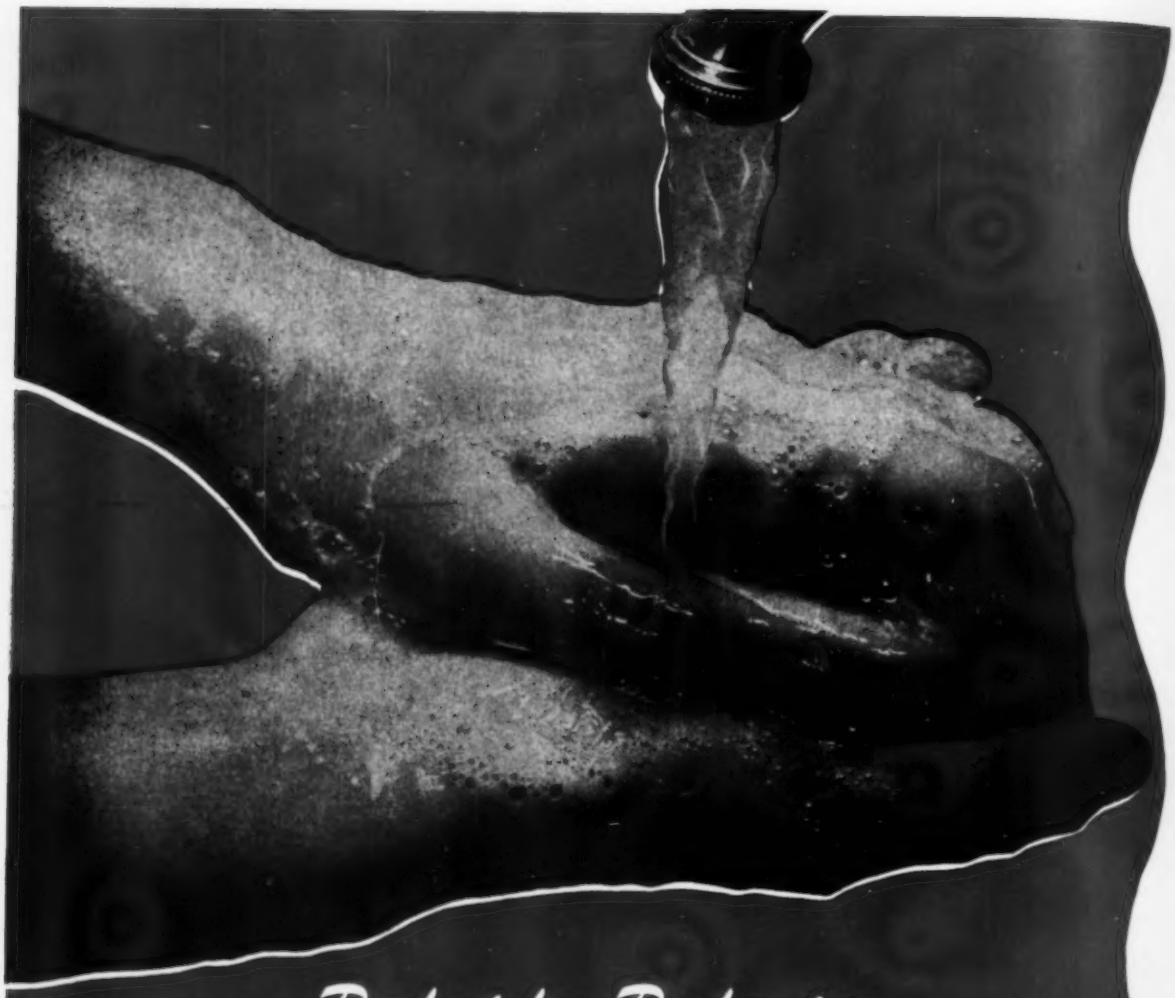

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Even when Oil of Citronella was low in price and easy to obtain, JAVONELLA was a reliable favorite. A great many manufacturers preferred its finer, cleaner odor, its uniform quality and consistent economy. And now that Citronella is so high in price and difficult to get, JAVONELLA is more important to you than ever before.

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For faster washups . . . lifts out pore dirt and grime . . . CONTAINS SOOTHING LANOLIN

The New HY-O-LAN Powdered Hand Soap is now *pulverized*—for faster washups. This New HY-O-LAN is *smoother, finer.* It penetrates *deeper*—right down to the pore bottoms—and floats out the imbedded dirt and grime.

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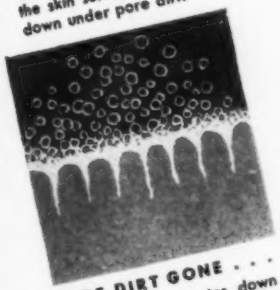

PORE DIRT GONE . . . HY-O-LAN penetrates down to the pores and lifts out dirt and grime.

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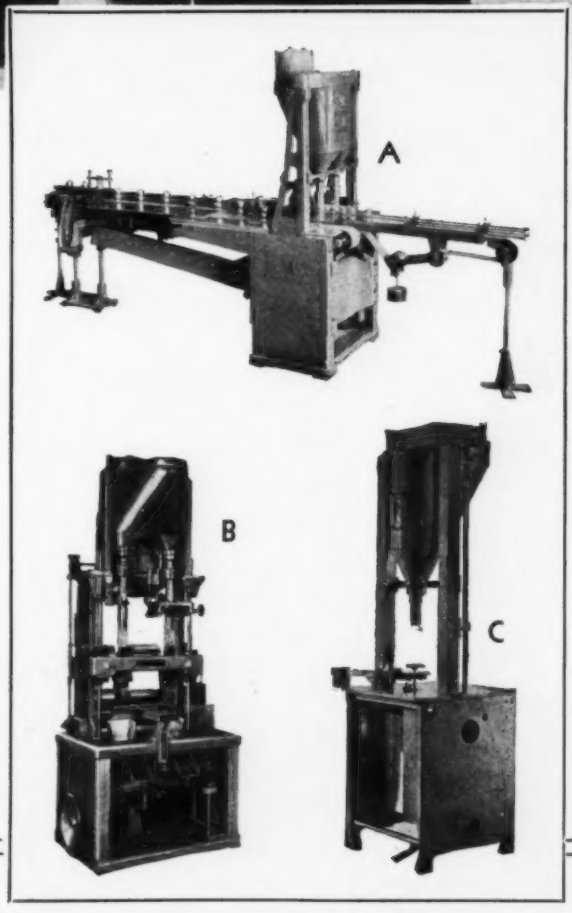
LOOKING AHEAD
toward Post-war Days

Today, our facilities, like those of so many others, are filled to capacity turning out material that is helping bring victory and peace closer. For that reason we cannot always give the service which has built the "S & S" reputation over the past 40 years.

We are doing our best, though, to help our many friends and customers all we can. But, if you have to wait for repair parts or even new machines, we hope you will understand.

In the meanwhile, our engineers and designers are working steadily so the S & S machines you will want after the war will serve you better.



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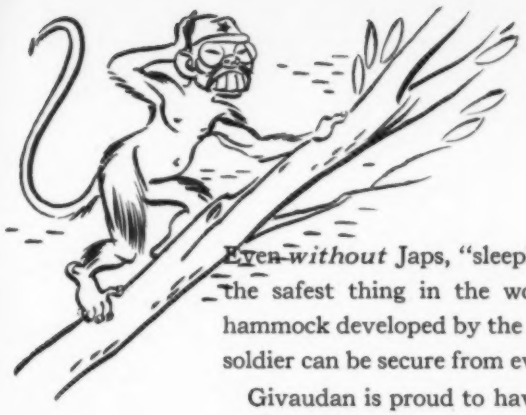

Even *without* Japs, "sleeping out" in the jungle would not be the safest thing in the world. But in this ingenious jungle hammock developed by the U. S. Army Quartermaster Corps, a soldier can be secure from everything save actual enemy attack.

Givaudan is proud to have contributed Compound G-4*, its highly efficient mildew-proofing agent, to the protection of mosquito netting, balloon cloth, and other "GI" fabrics such as are used in jungle hammocks against deterioration due to moisture, particularly under humid tropical conditions.

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*2,2'—dihydroxy 5,5'—dichlorodiphenyl methane

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. . . is a colorless high-boiling (148.9°C.) liquid that is soluble in most organic solvents but only 0.43 per cent soluble in water. It is used in hydraulic fluids, synthetic resin varnishes, and wetting and ore-flotation agents. The introduction of the Ethylbutyl group increases the oil solubility of the resulting derivatives. Ethylbutyl esters of dicarboxylic acids are plasticizers possessing low volatility and water solubility. In azeotropic distillation processes where the complete removal of water is desired, Ethylbutanol is extremely effective.

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$CH_3COOCH_2CH(C_2H_5)_2$

. . . is a colorless liquid that boils at 162.4°C. Resembling amyl acetate in many of its properties and having the same toluene nitrocellulose dilution ratio (2.1), it is used as a moderately high-boiling solvent in lacquers and synthetic resin finishes. Its evaporation rate is somewhat slower than that of amyl acetate; therefore, lacquers made with Ethylbutyl Acetate form smooth high-gloss films with little tendency to blushing or orange peel. Ethylbutyl Acetate shows promise in nitrocellulose printing inks.

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. . . a glycol-ether . . . is a colorless liquid that boils at 186°C. It resembles Butyl "Cellosolve" in many of its properties, but unlike it is almost insoluble in water (0.45 per cent at 20°C.) Used in synthetic resin lacquers, it should produce excellent gloss, lack of orange peel, and toughness of film. Additional applications for this compound include use as a constituent of hydraulic fluids, as a mutual solvent, and as a plasticizer intermediate.

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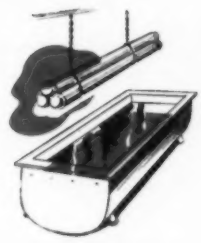

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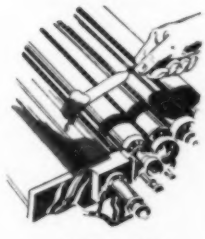

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To help remind handlers of Liquid Caustic Soda of the care necessary in unloading tank cars, a special instruction card has been prepared by Columbia. Posted in prominent locations, this 11" x 14" card will help to prevent accidents and errors which cause delays and disrupt your operations. Cards are yours for the asking, regardless of your Caustic Soda supply. Send for yours today.

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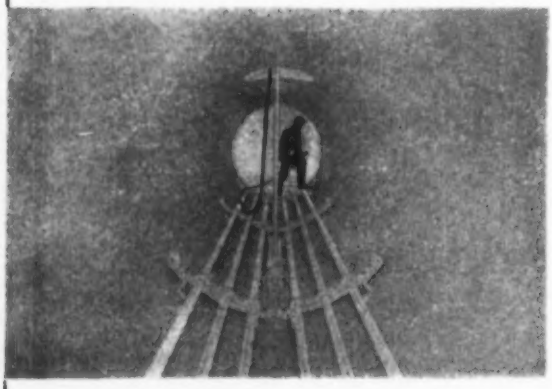
Columbia's patented lining for tank cars is one of the important factors enabling the first successful and practical shipping of 73% Liquid Caustic Soda. That's why this lining is carefully checked and maintained in perfect condition at all times. Owing to the pressure of war work, the outward appearance of these cars occasionally suffers. But inside—where it really counts—Columbia tank cars are 100% efficient.



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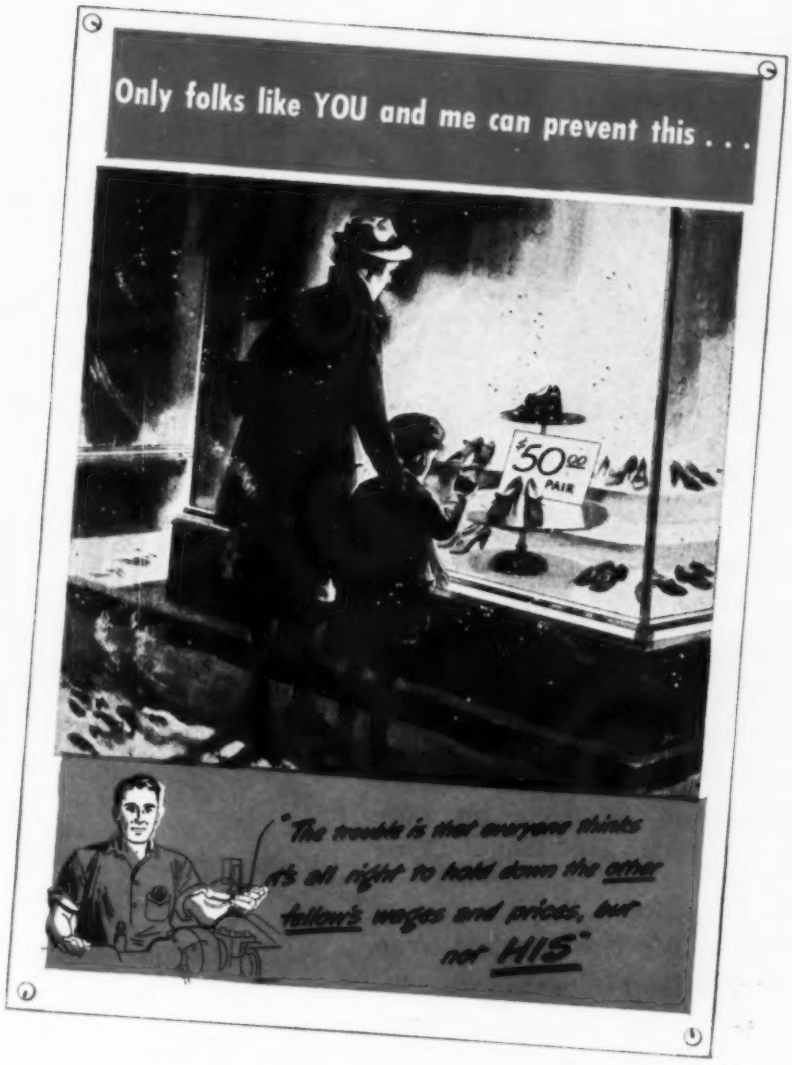
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The greatest weakness in the fight against inflation is that everyone thinks it's all right to hold down the other fellow's wages and prices, but not his.

Will *you* help in this fight? It's your battle.

If you would like to help this fight by displaying this poster, use the coupon below for free copies.—Koppers Company and Affiliates, Koppers Bldg., Pittsburgh, Pa.

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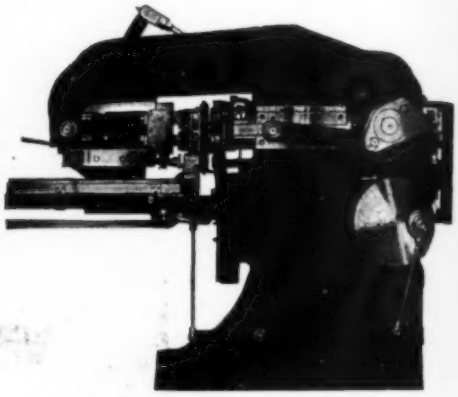
Save hundreds of dollars more per year than earlier models!

THEIR long toggle pressure makes the soap cohere so that particles do not stick to the dies. This makes long runs possible without stops for cleaning. Such stops on old model presses put the whole line out of production for more minutes per day than you realize without adding them up.

Again, dies which accumulate scrap, press only a few before the soap cakes begin to lose their finish and clean impression. If the dies are run too long before cleaning, many cakes will have to be remilled and pressed again. This costs money, but it costs more in loss of sales to neglect it.



Type K Toggle Operated Toilet Soap Press

Toggle Operated Presses insure higher production, prevent early depreciation, multiply by three the life of dies and conserve the nerves of workers by their noiseless, efficient operation.

The best-looking soaps on the market today are being produced by the use of modern JONES TOGGLE PRESSES.

R. A. JONES & COMPANY, INC.

P. O. BOX 485 CINCINNATI, OHIO

EDITOR

THAT soap shortages have developed in various localities throughout the country, particularly in the case of flake and chip laundry soaps, has been quite well known in the industry. In answer to some criticism on this score, the War Food Administration has explained the shortages as due chiefly to hoarding by housewives and other small individual soap consumers. To some extent, this may be a part of the answer, but at the same time, we wonder if the W.F.A. knows that soap production has been on a restricted basis, in fact eighty per cent of 1941-42 output, for many months.

Really, WFA ought to know about this reduced production inasmuch as they conceived and issued the order which put it into effect. Now that production quotas have been materially increased, maybe they have forgotten about the eighty per cent figure to which reduced rate of operation they cut the soap industry some months back. Of course, there has been some soap hoarding over the past six months,—what could be expected with all the newspaper ballyhoo about reduced soap production and the threat of rationing?—but as far as we can determine, recent hoarding was no worse and probably not as bad as during the year preceding the issuance of the eighty per cent quota order.

As events have proved, the eighty per cent figure was too low for several good reasons, but second guessing is always easy and nobody knew that at the time it was set by WFA. They very properly played it safe in the national interest,—or remembering our lend-lease commitments, should we say international interest? But to hang local soap shortages on housewife hoarding is not the right answer, and looks like an attempt to establish an alibi when no alibi is needed.

THE "fat stretching" program which has been reported under consideration by WFA ever since early this year has finally culminated in Order FDO-86 which has just been released. It embodies a series of mandatory increases in rosin and builder content of various soaps, the evident intention being to make the fatty soap raw materials stretch farther, and thus make possible an increase in the nation's soap supply.

With the underlying purposes behind the order we are in complete agreement. We do feel, however, that some members of the industry may have valid complaints in the particular effect that the order may have upon them. It must be kept in mind in interpreting the new restrictions that they do not simply set minimum requirements on use of rosin and builders; rather they require that the soap maker use additional amounts of these materials "over and above the amounts that were used in the base period."

We submit that this is patently unfair to those firms who prior to the date of the base period voluntarily revamped their formulas to allow for the maximum acceptable use of non-fatty raw materials. As it has worked out in so many other cases under government programs of voluntary cooperation, those firms who naively step-

ped in with their maximum contribution on a voluntary basis, now find that they are thrown right into the pot along with the rest of their competitors when the time comes for dictated formula changes. It tends to make us a trifle wary of voluntary moves, and convinces us more than ever that mandatory orders affecting the entire industry on the same terms offer the only fair way of handling such situations.

A STORY originated by the Associated Press in Washington last month, dealing with the use of lard in the soap kettle, has been receiving considerable publicity from the nation's newspapers over recent weeks. Like many such stories, this one was based on partially misunderstood facts, and has been the subject of much misinterpretation. To start with, there is nothing particularly new in this use of lard by the soap industry. The release of lard and other edible fats for soap use was effected by the WFA a number of months ago. In the third quarter approximately one hundred million pounds of such edible fats found their way to the soap kettle, we are told. The AP story developed its anticipated use of four hundred million pounds of lard over the coming year by simply multiplying this single quarter use by four. Incidentally, nothing in this story was based on any official statement from anyone connected with WFA, the source being the usual "unidentified official."

Our own immediate reaction was that this seems to be a powerful lot of edible fat to switch off the food line under present conditions. Doing a little quick figure juggling, we wonder why it might not have been better to keep our butter at home for domestic use, send the edible fat to Russia and push more of such inedibles as tall oil into soap. We wondered, too, just how the American housewife can be expected to react when she discovers that hundreds of millions of pounds of a rationed commodity, that she has to give red stamps for, is going into soap. The fact that she, and not the soap maker, is the end user of this fat is all too likely to be overlooked.

Secondly, it would seem that lard is a trifle expensive as a soap raw material if other fatty raw materials are available. How can the soap maker, for instance, be expected to pay approximately five cents a pound premium for an edible raw material, and still continue to sell his finished soaps under present ceilings? The answer, apparently, is that some soap makers are doing just this, to judge by the substantial edible fat consumption in this one reported quarter.

CARTOONS are frequently humorous because of the gross exaggeration which they portray. But the cartoonist who recently gave his version of post-war planning in the form of a drawing of the boss firing people right and left, probably hit closer to the target than he believed. He must have read the unexpressed thoughts,—or in some cases very vehemently expressed,—of many an employer. That employers have taken a bad pushing around over the past two years by their employes is a well-known story. That the employer has generally resented it, and is biding his time to take revenge is altogether likely.

Talk of the great sacrifices which labor has made thus far in behalf of the war effort is, as we all know, just so much twaddle. Labor generally has benefited handsomely from the war. As we see it, the sacrifice will come, however, and it will come after the war during the period of readjustment. If a sharp backswing of the pendulum could be avoided, it would be a life-saver for industry and the country as a whole, as well as for labor, but we fear that a miracle will be needed to prevent smouldering employer resentment from bursting into flames once the war is over.

SOAP FORMULA CHANGES

New Soap Fat-Stretching Order FDO-86 Issued by WFA . . . Requires Increased Use of Rosin and Builders . . . Heavy Use of Edible Lard in Soaps Reported . . . Soapers Exempted from New Restrictions on Container Use . . . 10% Sales Tax on Toilet Soaps Proposed by House.

A NUMBER of important new developments have drastically re-shaped the soap picture again this month. Of particular interest, was the *Associated Press* story which broke in mid-October and was widely used by newspapers all over the country to the effect that 400,000,000 pounds of lard might be expected to find use in soaps over the coming year. While it was not exactly news to soapers that edible lard is being used in the soap kettle, it may have come as quite a surprise to some soap makers to learn that as much as 100,000,000 pounds found such use in the third quarter, and that this high rate of use might well be expected to continue.

Of even greater immediate significance was the issuance October 20th of the new Soap Conservation Order, commonly spoken of as the "fat-stretching order". This new order (FDO-86) sets certain minimum requirements for use of rosin and various builders in several types of soaps for domestic use. It is accompanied by a new amendment to OPA's price regulation governing soaps, in which a continuation of present maximum prices is provided for so long as the anhydrous soap content of products affected does not fall below fixed levels.

Indicative of the government's apparent desire that nothing be allowed to stand in the way of increased soap production was the issuance October 7th of an amendment to Iron and Steel Conservation Order M-126, removing previous restrictions on the manufacture of soap-making machinery. Amendment No. 2 to M-126 removes completely all former restrictions on manufacture of soap machinery. Where priority ratings are needed by the machinery manufacturer to get raw materials, the soap maker is advised to apply for the necessary rating on WPB Form PD-1A.

Also indicative of the government's apparent interest in seeing the maximum quantity of soap get to market was the relatively favorable consideration which the soap industry received under the new container order L-317. No quota restrictions were set in this new WPB order on use of containers by manufacturers of soaps and scouring powders, although use was restricted for 36 other groups of manufacturers, including makers of paints, books, clothing, china and glassware, furniture, beverages, cosmetics, dentifrices, perfumes, household polishes and waxes. The new container order does, however, limit soap manufacturers in their *inventories* of unfilled containers to a 30-day supply.

TO review in greater detail the developments of the past month of chief significance to soap manufacturers, we return first to a review of the latest amended version of FDO-42 (the WFA restrictive order on use of fats and oils). The principal effect of the new amendment (No. 2, issued October 12 and retroactive to October 1) was to materially increase soap manufacturing quotas. As reported in our October issue, page 25, the percentage of fats and oils permitted to be used by soap makers was increased from the former figure of 80 per cent to a new figure of 90 per cent of base period use (1940-1941), with the quota for industrial soaps being upped to 110 per cent, and that for abrasive or mechanics' soaps to 150 per cent.

Another change in the amended order raises the maximum rate at which a soap manufacturer (established prior to July 1, 1943) may operate while still retaining his exemption from quota restrictions. Under the old order all soap makers consuming over 6,000 pounds of fats and oils per quarter were subject to quota restrictions. The amendment raises this maximum before imposition of quota restrictions to 10,000 pounds of fats and oils per quarter. A still further change in the new order is the exemption from quota limits of laundry soap used in contract laundering for the Armed Forces, the War Shipping Administration and the U. S. Maritime Commission.

THE "lard story" originated in an interview which an *AP* representative obtained with an unnamed WFA spokesman. According to this source lard supplies have reached a point where "Government officials consider it advisable to divert considerable quantities" to non-edible uses. WFA officials were quoted to the effect that 100,000,000 pounds of lard have been released to soap makers during the third quarter, and that plans are being laid to make an additional 400,000,000 pounds available for soap use over the coming 12-month period. Estimated production for the next 12 months is set at 3,000,000,000 pounds. Of this total it is anticipated that

1,700,000,000 pounds will go to civilians under the rationing program, and the balance will go to the Armed Forces, for lend-lease, and for inedible purposes such as the manufacture of soap, the *AP* story indicated.

In apparent defense against possible anticipated criticism of their action, WFA officials are reported by *Associated Press* as saying that "lard made into soap replaces an equivalent amount of tallow needed in the production of synthetic rubber. It also provides such by-products as glycerine for war purposes." The WFA is also reported as hedging against any guarantee that use of lard for soapmaking can continue indefinitely. Because of dwindling supplies of feed grains, the WFA has asked farmers to raise fewer hogs next year, and they indicate that it is thus quite possible that a year from now all the lard produced will be needed to meet essential civilian and military food requirements.

This lard situation raises a number of very interesting questions for the average firm. One soap maker commented somewhat as follows: "Perhaps the big soapers, many of whom produce their own lard in businesses allied to their soap making operations, can find a way to turn surplus lard production into the soap kettle without sustaining too much of a loss. For the firm that must buy lard in the open market, however, it would seem impossible to pay the necessary premium for edible lard, and still attempt to sell finished soap at previously established ceiling prices." The OPA has in the past shown a distinct aversion to any suggestions for increases in soap price ceilings, and apparently little relief can be expected from this direction in case the soap industry generally must go to this much higher priced raw material. From previous decisions in similar cases it would seem that the only basis for an appeal to OPA for relief would be proof that a substantial part of the industry was being forced to operate at a loss because of the necessity of using this more costly raw material. As long as profits continue to be shown, relief from this quarter would seem to be difficult to obtain.

Another soaper was even more caustic in his comment, and referred rather sharply to the oblivion which overtook what he described as "a similar scheme of government experimenters" six or eight months ago. He referred, of course, to the proposal advanced early this year that soap makers be asked to use a substantial quantity of linseed oil to make up the shortage in the supply of normal soap making oils. He reminded that at one time the WFA seemed just as certain that millions of pounds of linseed oil would go into soap as they now seem to feel that hundreds of millions of pounds of lard will end up in the soap kettle. He commented, however, that when soap makers told the government planners what they thought of linseed as a soap oil, and when linseed users heard what end use was being planned for tremendous quantities of a drying oil they urgently needed, the elaborate plans for linseed use in the soap kettle somehow became sidetracked. He predicted a possible similar end for the plans to use lard in large tonnage for soapmaking purposes. Perhaps he has overlooked the fact, however, that lard is already being used in the soap kettle, and is a suitable fat if the soaper can pay the price, where linseed oil was acknowledged to be unsuitable, and never did attain the degree of use which lard has already reached.

THE long awaited "fat stretching" order finally appeared in the October 20th edition of the *Federal Register*. Tabbed as FDO-86, it follows very closely along the lines indicated in our preview in the October installment of our Washington report, page 25. The new order is designed to stretch soap supplies approximately 9 per cent without use of additional fats or oils. This is to be accomplished by the enforced use of additional quantities of rosin or rosin and builders in numerous soap products for domestic use over and above the amounts which were used during an established "base period." (Thirty-day period ending July 17, 1942.) The percentage of substitution will be from 2 to 15 per cent, depending on the type of soap, in accordance with the following table:

Type	*Rosin*	*Rosin or Builders*
Toilet bars	2%	None
Fine fabric	5%	None
Floating soap ..	2%	None
White laundry..	4%	None
Chips and granules (62%)	5%	5%
Chips and granules (82%)	5%	10%

No change is required for washing powder, hand paste, liquid soap or yellow laundry soap. The latter is standardized at 58 per cent total anhydrous soap, of which 62.5 per cent is the maximum fat content, with the balance rosin.

The order became effective November 1. Concurrently the OPA has amended its price controls over soaps so that manufacturers may comply with the new requirements with the minimum necessity for change in their present price levels. In a statement of its attitude toward the new program the OPA has indicated that so long as the serviceability of the soap products affected is not reduced, there will be no OPA pressure for lower price levels. The OPA action which takes the form of an amendment (No. 2) to Commodity Practices Regulation No. 1, went into effect October 20. It calls for continuation of present maximum price levels as long as the anhydrous soap content does not fall below 99 per cent in bar soaps and 97 per cent in packaged soap. Previous OPA action had defined anhydrous soap as including rosin soaps. Under the new OPA amendment, soap manufacturers are required to report to the OPA office in Washington all changes in anhydrous soap content. Where percentages of anhydrous soap content fall below the prescribed percentages, OPA will require that manufacturers either reduce their prices proportionately, or make a commensurate increase in the size of the bar or package.

Addition of rosin in the required percentages will apparently have no effect on the price structure, since replacement of sodium soaps with rosin soap will cause no drop in anhydrous soap content. The replacement of soap content by use of water softening builders, however, will apparently

carry with it the requirement that the soap maker make a compensating reduction in price of his package or increase its content. The water softening builders mentioned as being permissible replacements for soap are defined in the order as "water soluble alkaline compounds except sodium and potassium hydroxide, added to soap to aid and increase its detergent properties."

The OPA regulation covering the price aspects of these imposed formula changes has not of this date (October 25) been issued as yet. Thus it is not possible to assess finally what price changes must be anticipated.

To return to the WFA order once more, there are several other sections of FDO-86 which will affect the soap maker's operations. For one thing it will have the effect of limiting every soap maker after November 1, 1943, to production of the particular types and qualities of soap made by him during the "base period," or made prior thereto and offered for sale during the base period. No change now or in the future will be permitted in moisture content of soaps. Moisture content will not be permitted to exceed moisture content of finished products as made in the base period.

FDO-86 also restricts inventories of soap buyers. Inventory limit is fixed at a 45-day supply at the current rate of consumption, or two bulk packages or cases, whichever of the two is smaller. Exemptions are allowed to manufacturers, wholesalers, retailers, converters and designated governmental agencies. Manufacturers, wholesalers and dealers are instructed to demand from non-exempt purchasers, certificates of compliance with inventory restrictions, which must be held for at least two years.

THE container picture currently looks somewhat brighter for the soap industry—brighter at least than it does for other container users.

Although soaps and scouring powders were not restricted in the recently issued order L-317, curtailing use and manufacture of fibre containers, other than cutting down in-

(*Turn to Page* 30)

Summary of Provisions of FDO-86, Prepared by Association of American Soap and Glycerine Producers

WITH reference to the following summary, keep in mind that under the Order itself, the term "total anhydrous soap" includes rosin soap whereas "base anhydrous soap content" does not; that the "base period" is the 30-day period ending July 17, 1942; that moisture content must not exceed that of the finished product as made in the base period; that on and after November 1, 1943, the production of a manufacturer is limited to the particular type and quality of soap made by him during the base period or made by him prior thereto and offered for sale by him during the base period; that a converter is subject to the same rules that apply to a soapmaker; and that anhydrous soap content is computed on the basis of weight at the time the soap is made. Seven classes of soap are set up by the Order and restrictions are applied as follows:

Bar Soaps

Bar soaps with base anhydrous soap content of 60 per cent or more, except rosin yellow laundry bars. (*Class* 1) Toilet bars are included as well as laundry bars.

White laundry bar soap of less than 60 per cent base anhydrous soap content (*Class* 5).

Rosin yellow laundry bar soap (*Class* 6).

Packaged Chips, Flakes, Powders, Granules, or Similar Packaged Forms

Packaged soaps in above forms with base anhydrous soap content of 85 per cent or more. (*Class* 2).

Packaged soaps in above forms with base anhydrous soap content of 70 per cent or more, but less than 85 per cent. (*Class* 3).

Packaged soaps in above forms with base anhydrous soap content of 50 per cent or more, but less than 70 per cent. (*Class* 4).

Substitution Required

Anhydrous soap content from fats and oils only, must equal 98 per cent of base anhydrous soap content; rosin soap content must exceed the rosin soap content in the base period by an amount equal to 2 per cent of base anhydrous soap content. (Class 1)

Total anhydrous soap content must not exceed 42 per cent; rosin soap must comprise 4 per cent of such content. (Class 5)

Total anhydrous soap content must not exceed 58 per cent; rosin soap must comprise not less than 37½% of such content. (Class 6)

Anhydrous soap content from fats and oils only, must equal 95 per cent of base anhydrous soap content; rosin soap content must exceed rosin soap content of product as made in base period by an amount equal to 5 per cent of base anhydrous soap content. (Class 2)

Anhydrous soap content from fats and oils only, must equal 85 per cent of base anhydrous soap content; rosin soap content must exceed rosin soap content of product in base period by an amount equal to 5 per cent of base anhydrous soap content; and in addition, rosin soap, builders, or rosin soap and builders, must exceed the quantity of such materials in the soap in the base period by a further amount equal to 10 per cent of base anhydrous soap content. (Class 3)

Anhydrous soap content from fats and oils only, must equal 90 per cent of base anhydrous soap content; rosin soap content must exceed rosin soap content in base period by an amount equal to 5 per cent of base anhydrous soap content; and in addition, rosin soap, builders, or rosin soap and builders, must exceed the quantity thereof in the soap in base period by a further amount equal to 5% of the base anhydrous soap content. (Class 4)

Other Soaps

Class 7 does not require substitution of rosin soap, builders, or fillers for the base anhydrous soap content of soaps in any form not included in the six classes described above. By specific reference, the following are exempted:

Soap chips, flakes, powders and granules not included in above classes.
Solid soap sold in bulk packages. Liquid soaps. Shampoo soaps.
Package or bulk washing powder. Paste and powdered hand soaps.
Paste potash soaps. Shaving creams and shaving soaps.

TEXT OF FOOD DISTRIBUTION ORDER NO. 86, RESTRICTING MANUFACTURE AND DISTRIBUTION OF SOAP — ISSUED OCTOBER 18 AND EFFECTIVE NOVEMBER 1, 1943

TITLE 7—AGRICULTURE

CHAPTER XI—WAR FOOD ADMINISTRATION

(FOOD DISTRIBUTION ORDERS)
(Food Distribution Order No. 86)

PART 1460—Fats and Oils

RESTRICTIONS ON THE MANUFACTURE AND DISTRIBUTION OF SOAP

The fulfillment of the requirements of defense of the United States will result in a shortage in the supply of fats and oils and soap for defense, for private account and for export; and the following order is deemed necessary and appropriate in the public interest and to promote the national defense:

§ 1460.30. *Restrictions on the manufacture and distribution of soap.*

(a) *Definitions:*

(1) "Soap" means the water soluble product formed by the saponification or neutralization of fats, oils, rosins, or their fatty acids with organic, sodium, or potassium bases; or any detergent composition containing such products.

(2) "Total anhydrous soap" means dry soap free from concomitants (including, but not limited to, unsaponifiable matter, glycerine, chlorides, carbonates, free caustic alkalies, and water insoluble material) and free from builders and fillers. The term includes both rosin soap and soap made from fats and oils. The total anhydrous soap content of any soap shall be computed, as of the time of manufacture, on a weight basis and expressed as the percentage which such content bears to the whole soap.

(3) "Soap product" means a kind of soap of a particular type and quality produced by a manufacturer during the 30-day period ending July 17, 1942, or a kind of soap of a particular type and quality offered for sale by a manufacturer in such period which was not produced in such period but which was produced by him prior to such period.

(4) "Base period" means, with respect to any soap product, the 30-day period ending July 17, 1942, or if the soap product was offered for sale in said 30-day period by a manufacturer but was not produced therein and was produced prior thereto by him, it means the most recent period prior thereto when such product was produced by him.

(5) "Base anhydrous soap content" means the anhydrous soap content derived from fats and oils only which was present in a soap product as produced in the base period. The base anhydrous soap content shall be computed, as of the time of manufacture, on a weight basis and expressed as the percentage which such content bears to the whole soap.

(6) "Fats and oils" means all the raw, crude, refined, and pressed fats and oils, whether vegetable, animal, fish, or other marine animal, including grease (lard) oil, sulfonated and similarly processed fats and oils, fatty acids, lard, and rendered pork fat, but not including butter, wool (greases) fats, essential oils, whole tall oil, mineral oils, and vitamin-bearing oils derived from fish or other marine animal livers or viscera.

(7) "Rosin" means the common resin obtained from trees of the pine family and includes gum rosin, wood rosin, hydrogenated rosin, polymerized rosin, rosin or abietic acid separated from tall oil, and crude or refined tall oil as such.

(8) "Builders" means water soluble alkaline compounds except sodium and potassium hydroxide, added to soap to aid and increase its detergent properties.

(9) "Fillers" means all water insoluble substances and all water soluble materials except alkaline compounds.

(10) "Person" means any individual, partnership, association, business trust, corporation, or any organized group of persons whether incorporated or not.

(11) "Manufacturer" means any person who produces soap and includes a soap converter.

(12) "Soap converter" means any person who uses soap made by others as a raw material, and by the addition of other materials, including, but not limited to, silicates, phosphates, abrasives, borax, corn meal, and soda ash, makes a finished product which is sold for detergent uses.

(13) "Packaged soap" means any bar soap and any other soap packed in a unit package weighing less than 25 pounds net.

(14) "Bulk package" means a unit package containing 25 pounds net or more of any soap except bar soap.

(15) "Inventory" means, with respect to any person, the quantity of soap which has been delivered to him and is on his premises or in other storage facilities used by him, except that it does not include a soap converter's stock of finished products.

(16) "Director" means the Director of Food Distribution, War Food Administration.

(b) *Classification of soap.* For the purposes of this order all soap products shall be classified as follows:

(1) Class 1 shall include all bar soaps (except bar laundry soaps in class 6 hereof) with a base anhydrous soap content of 60 per cent or more.

(2) Class 2 shall include all packaged soap in the form of chips, flakes, powder, granules, or similar packaged forms with a base anhydrous soap content of 85 per cent or more.

(3) Class 3 shall include all packaged soaps in the form of chips, flakes, powder, granules, or similar packaged forms, with a base anhydrous soap content of 70 per cent or more, but less than 85 per cent.

(4) Class 4 shall include all packaged soaps in the form of chips, flakes, powder, granules, or similar packaged forms with a base anhydrous soap con-

As One Soap Maker V

THE provisions of FDO-86 effective November first, 1943, generally speaking, should not necessarily be hard for most soap manufacturers to meet. The extent of the difficulty in meeting these provisions will to a considerable extent depend upon what the soap maker had been doing in the base period. While it is probably true that not many soap makers had gone "all out" in the use of rosin in the base period, it may be noted that those who had, will experience a greater degree of difficulty in meeting the provisions of the new WFA order. Since it is characteristic of rosin soaps to be sticky and soft, the soap maker will naturally seek such relief from trouble as he can obtain from reducing the moisture content or "salting up." There would hardly be much desire on the part of the soap maker to increase the moisture content of his soaps, even if one of the provisions of FDO-86 did not prohibit this procedure. The fact that rosin will give a slightly higher anhydrous soap yield, and require a slightly lower amount of caustic soda to produce it than the average fats may be worthy of mention, although it is apparent that this is just a fortunate characteristic in this case.

That rosin should be the item first voluntarily selected, and now is one of the important materials use of which is required by FDO-86, is significant. Shortly after the beginning of the war, there was much speculation as to what our position on fats would be as time passed. A lot was said and printed about substitutes, which might have some possible value under certain circumstances. Nearly always rosin was mentioned along with other items. It may be concluded therefore that when the other numerous items were examined for applicability to the situation, that for one reason or another the natural fats were found to be not as suitable as rosin, and that no synthetic product of promise comparable to rosin has subsequently come upon the soap maker's horizon.

We may recall the story that was making the rounds a short time ago, to the effect that untold millions of pounds of linseed oil would be available for soap making. For

tent of 50 per cent, or more, but less than 70 per cent.

(5) Class 5 shall include all white laundry bar soap of less than 60 per cent base anhydrous soap content.

(6) Class 6 shall include all rosin yellow laundry bar soap.

(7) Class 7 shall include all other forms of soap not included in said classes 1 to 6, inclusive, including, but not limited to, solid soap sold in bulk packages, package or bulk washing powder, paste potash soaps, liquid soaps, paste and powdered hand soaps, shaving creams and shaving soaps, shampoo soaps, and soap chips, flakes, powder, or granulated products not included in said classes 1 to 6 inclusive.

(c) *Restrictions on the manufacture of soap.* On and after November 1, 1943, the production of a manufacturer shall be limited to his soap products as defined in paragraph (a) (3) hereof: *Provided, however,* That the contents of such products shall be made to conform with the provisions of paragraph (d) hereof.

(d) *Restrictions on the contents of soap products.* On and after November 1, 1943, no manufacturer shall produce any soap product unless the contents thereof shall comply with the following requirements:

(1) The anhydrous soap content derived from fats and oils only of any soap product within Class 1 shall be an amount equal to 98 per cent of the base anhydrous soap content of such product and the rosin soap content of such product shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 2 per cent of the base anhydrous soap content of such product.

(2) The anhydrous soap content derived from fats and oils only of any soap product within Class 2 shall be an amount equal to 95 per cent of the base anhydrous soap content of such product and the rosin soap content of such product shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 5 per cent of the base anhydrous soap content of such product.

(3) The anhydrous soap content derived from fats and oils only of any soap product within Class 3 shall be an amount equal to 85 per cent of the base anhydrous soap content of such product and the rosin soap content shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 5 per cent of the base anhydrous soap content of such product, and, in addition thereto, the amount of rosin soap, builders, or rosin soap and builders, shall exceed the quantity of such materials contained in said product as manufactured in the base period by a further amount equal to 10 per cent of the base anhydrous soap content of such product.

(4) The anhydrous soap content derived from fats and oils only of any soap product within Class 4 shall be an amount equal to 90 per cent of the base anhydrous soap content of such product and the rosin soap content of such product shall exceed the rosin soap content of the product as manufactured in the base period by an amount equal to 5 per cent of the base anhydrous soap content of such product, and in addition thereto the quantity of rosin soap, builders, or rosin soap and builders in the product shall exceed the quantity of rosin soap, builders, or rosin soap and builders contained in the product as manufactured in the base period by a further amount equal to 5 per cent of the base anhydrous soap content of such product.

(5) The total anhydrous soap content of a soap product within Class 5 shall not be greater than 42 per cent and rosin soap shall comprise not less, and not more, than 4 per cent of such content.

(6) the total anhydrous soap content of any soap product within Class 6 shall not be greater than 58 per cent and rosin soap shall comprise not less than 37½ per cent of such content.

(7) No change shall be required with respect to the contents of any soap product within Class 7. The moisture content of a soap product in its finished state shall not exceed the moisture content of such product in its finished state as produced in the base period. The contents of a soap product shall be computed as of the time of manufacture.

(e) *Restrictions on inventories.* Except as provided for in paragraph (f) hereof, on or after November 1, 1943, no person shall accept delivery of soap in a bulk package or packaged soap in a case, for use in any manner in his business operations, from a manufacturer, jobber, or wholesaler, if such acceptance of delivery will cause his inventory of soap to exceed a 45-day supply at his current rate of consumption; or two bulk packages or cases of packaged soap; whichever is greater, and unless he shall properly fill out and furnish to the person delivering the soap to him, with the order for such soap, a certificate in the following form:

The undersigned hereby certifies to the Food Distribution Administration, War Food Administration, and to

.....

.....

(name and address of supplier)

in compliance with FDO No. 86, that the delivery of the soap covered by the attached order No. ..... on the approximate date specified for delivery, to wit: ....., will not
(date)

cause his inventory of soap to exceed: (a) a 45-day supply at his current rate of consumption, or (b) two bulk packages or cases of packaged soap (strike out (a) or (b) whichever is inapplicable.)

.....
(Delivered)

By .....
(Date) (Authorized Official)

Views New FDO-86

those who anticipate some difficulty using rosin, give praise that linseed oil was not the answer. For if the soap maker thinks that rosin will present manufacturing problems, let him ponder upon the problem of soft bodied linseed oil soaps, and their odors, not to mention rancidity etc. The proposals for use of linseed oil did not carry with them the answers to such questions as to how the oil was to be made acceptable for the soap maker after availability. There were some hopefuls who thought that hydrogenation would make the oil acceptable, and such hopes were no doubt based on proper thinking, but these same hopes were short lived because the hydrogenation plants are already swamped with work.

Not so long ago a considerable tonnage of lard was made available for soap making, and the reaction of the press on this subject was summed up in a headline that appeared in at least one large area as follows—"Non Rationed Soap to be made from Rationed Lard." This reaction by the press naturally suggests the following questions.

1. There may be an over supply of lard, but if so why was it rationed? 2. Well then, the soap situation was desperate—well now is it? If so why not ration soap? Things like this must confuse the average person and quite frankly it is difficult for the soap maker to figure out some of the angles. For instance we are told that in addition to the lard now released, that there will be more available next year. This can only bring up the question of why time and money are spent in refining the lard. Why not produce white grease? There may be a perfect explanation, but if there is it has certainly not been widely publicized.

Another angle to this situation is the cost of lard to the soap maker. It would not be far out of line to say that lard will cost five cents per pound over the cost of white grease. We know that there are ceiling prices on soaps. So the question then is, how can you do it? We do know that releases of lard have been snapped up. Perhaps the answer is found in the fact that it IS being done and let it go at that.

Such certificate shall be retained by the manufacturer, jobber, or wholesaler receiving them as a part of his records for a period of at least two years, or for such other periods of time as the Director may hereafter specify. No manufacturer, wholesaler, or jobber shall deliver any soap to any person without receiving such certificate when he knows or has reason to believe that such person is required by the terms of this order to furnish him with such a certificate, and no manufacturer, jobber, or wholesaler shall deliver any soap pursuant to a certificate which he knows or has reason to believe is false, but, in the absence of such knowledge or reason for belief, he may rely on the certificate.

(f) *Exceptions.* The provisions and restrictions of paragraph (e) hereof shall not apply to the delivery to, or the acceptance of delivery by:

(1) Any person who accepts delivery of soap for the purpose of resale and who resells the soap in the form in which he received it, or who, prior to reselling, merely adds small amounts of color or perfume to the soap, or dissolves it in water to make liquid soap without adding other non-soap detergent materials; or

(2) The Army, Navy, Marine Corps, and Coast Guard of the United States; the Food Distribution Administration, War Food Administration (including, but not restricted to the Federal Surplus Commodities Corporation); the War Shipping Administration; the Veterans Administration; or any other instrumentality or agency designated by the War Food Administrator.

(g) *Contracts.* The restrictions of this order shall be observed without regard to contracts heretofore or hereafter entered into, or any rights accrued, or payments made thereunder.

(h) *Records and reports.*

(1) Every manufacturer shall keep records by calendar or fiscal months showing the amount of fats and oils and the amount of rosin used by him in the manufacture of each class of soap product, and the weight of the finished soap produced by him in each class.

(2)) The Director shall be entitled to obtain such information from, and require such reports and keeping of such records by, any person, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

(3) Every person subject to this order shall, for at least two years (or for such period of time as the Director may designate), maintain an accurate record of his transactions in soap.

(4) The record-keeping and reporting requirements of this order have been approved by the Bureau of the Budget in accordance with the Federal Reports Act of 1942. Subsequent record-keeping or reporting requirements will be subject to the approval of the Bureau of the Budget pursuant to the Federal Reports Act of 1942.

(i) *Audits and inspections.* The Director shall be entitled to make such audit or inspection of the books, records and other writings, premises or stocks of soap of any person, and to make such investigations, as may be necessary or appropriate, in his discretion, to the enforcement or administration of the provisions of this order.

Propose Ten P. C. Soap Levy

A new excise list that would levy a ten per cent manufacturers' sales tax on soaps, tooth pastes, dentifrices, mouth washes and a long list of other products and services, has been suggested by Colin F. Stam, chief of staff of the Joint Committee on Internal Revenue Taxation as an alternative to the Treasury Department's recommendation of a $400,000,000 increase in state and gift taxes. Members of the House Ways and Means Committee were reported to have said that Mr. Stam's proposals might be changed but that, in general, his list had apparently received favorable consideration. Its expected yield is an additional $1,500,000,000 annually. Following a meeting of the House Ways and Means Committee, it was reported October 27th that the proposed 10 per cent levy on soaps had been approved.

(j) *Petition for relief from hardship.* Any person affected by this order who considers that compliance herewith would work an exceptional and unreasonable hardship on him, may file a petition for relief in writing with the Director, addressed as follows: Director of Food Distribution Administration, Washington, 25, D. C., Ref. FDO 86. Such petition shall set forth all pertinent facts and the nature of the relief sought. The Administrator of this order shall then act upon the petition. In the event that the petitioner is dissatisfied with the action taken by the Administrator of this order, he may request a review of such action by the Director whose decision with respect to the relief sought shall be final.

(k) *Violations.* The War Food Administrator may, by suspension order, prohibit any person who violates any provision of this order from receiving, making any deliveries of, or using soap, or any other material subject to priority or allocation control by the War Food Administrator, and may recommend that any such person be prohibited from receiving, making any deliveries of, or using materials subject to the priority or allocation control of other governmental agencies. In addition, any person who wilfully violates any provision of this order is guilty of a crime and may be prosecuted under any and all applicable laws. Further, civil action may be instituted to enforce any liability or duty created by, or to enjoin any violation of, any provision of this order.

(l) *Communications.* All reports required to be filed hereunder and all communications concerning this order shall, unless instructions to the contrary are issued by the Director, or otherwise provided herein, be addressed to the Director of Food Distribution, War Food Administration, United States Department of Agriculture, Washington, 25, D. C. Ref. FDO 86.

(m) *Delegation of authority.* The administration of this order and the powers vested in the War Food Administrator, insofar as such powers relate to the administration of this order, are hereby delegated to the Director. The Director is authorized to redelegate to any employee of the United States Department of Agriculture any or all of the authority vested in him by this order.

(n) *Territorial Extent.* This order shall apply only to the 48 States of the United States and the District of Columbia.

(o) *Effective date.* This order shall become effective on November 1, 1943, at 12:01 a.m., E.W.T.

(E. O. 9280, 7 F. R. 10179; E. O. 9322, 8 F. R. 3807; E. O. 9334, 8 F. R. 5423.)

Issued this 18th day of October, 1943.

/s/ Ashley Sellers
Assistant War Food Administrator

Par Soap Co. Moves

Par Soap Co., formerly at 767 85th Ave., Oakland, Calif., has recently moved to 1100 78th Ave., Oakland, 3.

CONTAINER SITUATION

(*From Page 27*)

ventories to a 30-day limit, other limitations were levied on such products as dentifrices, cosmetics, dry-cleaning preparations, household polishes and waxes. The latter group of products were restricted in the following manner: household dry-cleaning preparations—80 per cent; cosmetics, excepting dentifrices and perfumes—65 per cent; dentifrices—80 per cent; household polishes—80 per cent; and household waxes—80 per cent. Quotas are based on the container board content in square feet of the new fibre shipping containers used by the manufacturer during the corresponding three-month period in 1942 for packing that product or use multiplied by the quota percentage listed. The usual exemptions—Army, Navy, Maritime Commission, Lend-Lease, etc. — apply to new fibre containers which are used to ship goods to those agencies. The order was effective October 1.

SYNTHETIC DETERGENTS . . .

Some of the more common non-soap detergents, their composition, characteristics and uses discussed,—second of two comprehensive articles

By Dr. Foster D. Snell

BECAUSE soap in solution reacts in hard water with calcium and magnesium salts to give insoluble calcium and magnesium soaps, and in acid solution to give insoluble fatty acids, synthetic detergents aim at overcoming the limitations of the —COONa radical as a solubilizing group. The two more important ways in which the carboxyl group is blocked in commercial synthetic detergents are by the formation of esters and by the formation of amides.

Esters are obtained by the reaction of alcohols and acids. The first detergents in this class to become commercially successful were the fatty alcohol sulfates, made possible by the catalytic reduction of fatty acids to fatty alcohols, applied industrially in the 1920s. Reaction of the fatty alcohols with sulfuric acid to form the sulfate esters takes place readily.

$$\underset{\text{fatty alcohol}}{ROH} + \underset{\substack{H_2SO_4\\ \text{sulfuric acid}}}{HOSO_2H} \rightarrow \underset{\text{fatty alcohol sulfate}}{ROSO_2H} + H_2O$$

Sulfuric rather than some other inorganic acid is used because it is cheap, readily available, and gives a highly satisfactory reaction product. The remaining acid hydrogen of sulfuric acid is neutralized by reaction with caustic soda to give the sodium salt.

$$\underset{\substack{\text{fatty alcohol}\\ \text{sulfate}}}{ROSO_2H} + \underset{\text{caustic soda}}{NaOH} \rightarrow \underset{\text{sodium salt of fatty alcohol sulfuric}}{ROSO_2Na} + H_2O$$

In the sulfated product, of which the Duponols and Gardinols are examples, R represent long hydrocarbon chains similar to those present in soap; —COONa has been replaced by a slightly stronger solubilizing group, $-OSO_2Na$. Unlike the former, the latter group has the advantage of being stable in hard water and in acid solution. The balance between the hydrocarbon and the solubilizing groups is such as to give excellent detergent action. In the reduction of fatty acid to fatty alcohol the hydrocarbon chain is lengthened by one $—CH_2—$ group, this longer chain compensating to some extent for the greater solubility of the sulfate radical.

$$\underset{\text{fatty acid}}{RCOOH} + 2H_2 \xrightarrow{\text{reduction}} \underset{\text{fatty alcohol}}{RCH_2OH} + H_2O$$

As outlined, more steps are necessary in the production of the fatty alcohol sulfates from natural fats than in the production of soap, so that processing costs are necessarily somewhat higher.

The molecular weights of detergent compounds fall strikingly within the range 300 plus or minus 50[5]. For example, the molecular weight of sodium stearate is 307, of sodium lauryl sulfate, 288, the active ingredient in Duponol WA. The latter product contains a rather large proportion of free sodium sulfate, present as a result of neutralizing excess sulfuric acid.

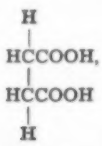
A certain proportion of neutral salt can be shown to be of benefit in many cases. One theory to explain this is that the salt permits closer packing of oriented molecules in an interface by reducing the repulsive force of the strongly electropositive cations as they range up next to one another. A different explanation — not necessarily conflicting with the first—is that the presence of inorganic salt below the concentration where salting out begins, promotes micelle formation or increases the colloidal nature of the surface-active substance in solution. The salt effect conforms to the Schultz-Hardy rule for the effect of electrolytes on colloids. For instance, the interfacial tension of Igepon T against transformer oil is lowered in the presence of a small amount of sodium chloride—giving a monovalent cation —is lowered even more in the presence of calcium chloride—giving a divalent cation—and even more in the presence of lanthanum chloride—giving a trivalent cation. Like soap, Igepon T is anion-active; its surface-activity and colloidal properties are augmented by the presence of small amounts of cations, this effect increasing with an increase in the charge on the cation.

Another example of salt effect is that Igepon T in a concentration of 0.03 per cent failed of detergent action in washing tests at pH 1 and pH 3, but showed marked detergent action at the same pH values in the presence of 5 per cent of sodium chloride[6].

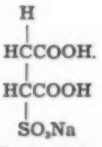
With soap the common builders are alkaline salts such as soda ash and sodium metasilicate. They aid the detergent action of soap by neutralization of acidity in the soil, elevation of the pH of the solution to diminish hydrolysis of the soap, and promotion of micelle formation or colloidality. Hydrolysis does not occur in most of the synthetic detergents. However, neutral salts are assistants for them in

somewhat the same way that alkaline salts are for soap. For example, sodium sulfate is a definite assistant for neutralized organic sulfates or sulfonates, that is, for surface-active compounds containing the —OSO_3NA or —SA_3Na group.

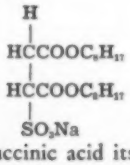
Esters of fatty alcohols with organic acids are also produced commercially, typified by the Aerosols. Most of these are esters of sodium sulfosuccinic acid with alcohols of varying chain length. Succinic acid, a dibasic acid,



is modified to contain the sodium sulfonate of succinic acid,



Each carboxyl group is esterified with an alcohol, in Aerosol OT, for example, with octyl alcohol, $C_8H_{17}OH$, to give the dioctyl ester of sodium sulfosuccinate:



Although succinic acid itself may not be the actual starting material, the Aerosol compound finally obtained is a derivative of succinic acid. The formulas are intended to show structure rather than method of manufacture.

Here we have three solubilizing groups, No. 3 (See Part I, Oct., 1943 issue.) of our previous list, —SO_3Na, and two organic ester groups, —COOR, No. 11. This compound has a molecular weight of 444, which is higher than those of the detergent group. It is not a detergent but is an excellent wetting agent in terms of the Draves test. At an interface the molecules may be assumed to orient themselves in the form of V's, with the solubilizing groups at the point of the V in the aqueous phase, the hydrocarbon tips of the V in the oil phase. The number of molecules which could arrange themselves in this way at an interface would be less than with a straight-chain structure, which may explain why their surface activity is sufficient to give them good wetting power but not good detergent properties.

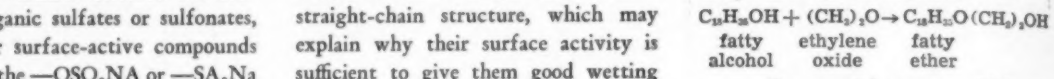
Dibutyl sodium sulfosuccinate —Aerosol IB, having half the number of carbon atoms in each hydrocarbon chain as the dioctyl ester, is soluble to the extent of about 40 per cent, compared with 1.5 per cent for the dioctyl ester. The dibutyl ester has no wetting power in pure water at low concentrations but becomes a good wetting agent in a saturated sodium chloride solution. This illustrates that by alterations in the molecule, surface activity can be produced for numerous purposes to meet various practical plant conditions. A number of the succinic-acid esters have the unusual property of being soluble both in water and in organic solvents.

A drawback with all organic esters is that they are unstable in strongly acid or strongly alkaline solutions, since esterification is a reversible reaction. Formation of an equilibrium mixture is catalyzed by acid or alkali.

Another example of an organic ester is Igepon A, $RCOO(CH_2)_2SO_3Na$. This contains a sodium sulfonate group as well as being an organic ester. In the formula R represents a long hydrocarbon chain. The compound has scouring properties, is stable in hard water, but is not resistant to high acidity or alkalinity.

Before leaving the esters, mention might be made of partial esters, exemplified by the Spans and Tweens. Spans include sorbitan monolaurate, monopalmitate, and other partial esters of hexitol anhydrides. The Tweens are polyoxyalkylene derivatives of the other compounds. Both types contain hydroxyl radicals and ether oxygen as solubilizing groups. The Spans have a lower ratio of ether oxygen to hydroxyl than the Tweens. These products serve as emulsifying agents for mineral oil, as in certain types of cosmetic creams, and in pine-oil emulsions.

Ethers: A less used method of muzzling the carboxyl group is by the formation of ethers. By reaction of a fatty alcohol with ethylene oxide, a fatty ether can be obtained.



Commercial agents which are ethers are exemplified by the Pergals. Even polymerization of ethylene oxide alone, instead of starting with a fatty alcohol, will build up a sufficiently large molecule to have surface-active properties, probably due to micelle formation. One example of such a structure has approximately the composition $HOCH_2(CH_2OCH_2)_{90}CH_2OH$.

A notable point concerning ethers is that they do not contain a strongly water-attracted group. Instead, more than one, usually several, mildly solubilizing groups are present. In ethers, no ionization occurs. Ethers are usually better as wetting agents than in other surface-active properties. The ether structure makes for extreme chemical stability.

Amides: More stable than the ester, Igepon A, is the newer product, Igepon T. In place of the —COONa of soap or the —COOR of an organic ester, this contains an amide derivative —CONH—, shown in the formula, $RCONH(CH_2)_2SO_3Na$. R here represents a C_{17} hydrocarbon chain with a double bond between the eighth and ninth carbon atoms, since the compound is based on oleic acid. It is formed by condensation of oleic acid chloride with 2-chloroethylamine, followed by treatment with sodium sulfite to give the final sodium sulfonate. The solubilizing groups give good balance with the hydrocarbon chain, resulting in a compound with detergent properties, resistant to hard water and stable in acid and alkaline solutions. Amides are stable under more drastic conditions of pH than organic esters are.

The Nopco products are amides or amines of the mixed fatty acids of a number of natural oils, described as oleic amide, coconut amide, castor amide and sperm amide,—oleic amine, etc. They have emulsifying ability but are not sufficiently surface-active to be strong detergents.

Alkyl Aryl Sulfonates: Hydrocarbons having a ring structure such

as benzene, can be made surface-active by introducing a solubilizing group—for example, benzene sulfonic acid shows some surface-active properties. The better known commercial products have a long aliphatic side chain as well as the solubilizing group or groups attached to the ring nucleus. One Twitchell reagent is an example, the product of reaction of oleic acid, naphthalene, and sulfuric acid. The formula may be written $RCH(C_{10}H_6SO_3H)$-COOH, with R representing a straight hydrocarbon chain of about 16 carbon atoms. The naphthalene radical is attached to the carbon atom adjacent to the carboxyl carbon. The ring carries a sulfonic acid group. This is an efficient emulsifying agent in acid solution and promotes fat splitting by emulsifying the fat into small droplets with a large surface area.

Products having a similar structure are typified by Nacconol NR—a crude product, and Nacconol NRSF, the purified product containing only a small proportion of neutral salt, as well as by Santomerse No. 1, a crude product, and Santomerse No. 2, a purified grade. The active ingredient of these may be described as the sodium salt of keryl benzene sulfonate. The term keryl represents an aliphatic hydrocarbon chain such as that which might be obtained from kerosene,—the raw material of these products being a petroleum fraction rather than a fatty oil. The formula may be written $RC_6H_3SO_3Na$, where R is a hydrocarbon chain of the order of C_{12}. The sodium sulfonate group is attached to the benzene nucleus. These products are strongly surface active, have detergent properties, and are resistant to hard water and to acid and alkali. They are potentially less expensive than agents obtained from vegetable or animal oils. Some of the Aerosols also belong in the alkyl aryl class.

This type of product is of significance in that all the previously discussed detergents are derived from vegetable or animal fats, nearly all of which could be treated or "beneficated" to give a food grade. By using kerosene as a starting material—in ordinary times a drug on the market—detergents can be produced without drawing on potential food stocks. The hydrocarbons of kerosene are chlorinated, then combined with benzene to give benzene with a side chain, say of C_{12}. The balancing power of the benzene nucleus, C_6H_6, is equal to about that of a straight hydrocarbon chain of 4 carbon atoms, so that the total hydrocarbon effect in such a product is about that of a straight C_{16} chain. The benzene nucleus is sulfonated to give the desired degree of solubility.

These alkyl aryl sulfonates have found a very important outlet in salt-water soaps, and are in wide use by the Navy. They take the place of the former coconut-oil salt-water soaps.

Cation-active Agents: The agents discussed above except for the non-ionizing ethers, are anion-active. They consist of a very large anion bearing a negative charge, with a simple cation such as sodium ion with a positive charge. Some of the newer agents are the exact opposite of this. They contain a very large cation balanced by a simple anion such as chloride ion. Examples are some of the Sapamines and Tritons. Most of the commercial products are quaternary ammonium compounds. The formula for such a compound is illustrated by $RN(CH_3)_3Cl$, which is trimethyl cetyl ammonium chloride when R stands for a hydrocarbon chain of 16 carbon atoms. The first commercial compound to become well known was benzyl dimethyl lauryl ammonium chloride.

Cation-active compounds of this type have surface activity in acid solution. They are incompatible with anion-active compounds, which they precipitate. For this reason cation-active agents cannot be used with Acid and Direct colors, but do serve as levelling agents in dyeing with Basic colors. They do not react with heavy metals.

An important property which has led to a special field of usefulness is that many of the cation-active agents possess germicidal activity. Both the Army and Navy have specifications for cation-active agents which combine bactericidal, fungicidal and wetting powers. These products are very widely used for treating athlete's foot, and by the Army in the field as germicides.

A study of chemical structure in relation to germicidal activity showed that the long hydrocarbon chain should contain the equivalent of 12-16 carbon atoms; any appreciable increase or decrease seriously interferes with germicidal activity[7]. Short hydrocarbon groups are also present.

Applications: While surface-active agents are being used more and more in all kinds of industries, the major volume, at least until very recently, has been in the textile field. Here special agents are used at nearly every stage, as in boiling off, dyeing, levelling, printing, starching and finishing. By the use of agents adapted to the different types of bath liquors, effects can be secured which could not be secured with soap. Greater penetration of dyes or of other treating agents and better levelling are obtained, at the same time hard-water soap spots are avoided. Some of the compounds have established a large field as penetrants in the tanning and finishing of leather.

Substitutes for household ammonia often contain these wetting agents. Some also contain a small amount of trisodium phosphate or sodium pyrophosphate. Glass cleaners frequently consist of small amounts of surface-active agents in aqueous solution. The aqueous, foaming type of "dry cleaners" such as the rug and upholstery cleaners sold for household use, are often solutions of synthetic detergents rather than of mere wetting agents. In these products foam formation is emphasized and some of the synthetic detergents are more active foamers than soap. Use in most commercial dry-cleaning soaps is limited because of their high cost. Aqueous moth-proofing compositions contain added wetting agents to give better spreading power and greater penetration of the moth-proofing compound. Many wall cleaners and wall-paper cleaners contain a synthetic agent as the active ingredient.

Metal polishes containing powerful wetting agents wet the surface of the metal much more rapidly than in their absence. Part of the work of cleaning is thus done by a chemical agent rather than by mechanical labor.

(*Turn to Page 74*)

STYRAX *and* OIL *of* STYRAX

by Dr. Ernest Guenther

Fritzsche Brothers, Inc.

PART II

STYRAX, an aromatic balsam exuded by the styrax tree, is offered commercially in two types. The so-called Asiatic or oriental styrax was described in the first installment of our study of the subject in the October issue. The second common type of styrax is the American variety, which over the past 25 years has passed the Asiatic variety in commercial significance.

American Styrax

LIQUIDAMBAR styraciflua L. (fam. *Hammamelidaceae*), our common gum tree, sweet gum, or alligator tree, is a beautiful native tree occurring along the Atlantic Coast from Connecticut southward to Central America. Fully grown, it reaches a height of 100 and sometimes even 150 feet.

There exist two varieties besides the type species. *L. styraciflua Mexicana* differs in that it has three-lobed leaves, instead of five- to seven-lobed leaves, as is common in the northern variety and in the *L. styraciflua macrophylla* of Central America, the leaves of which are much larger than those of the type series. The wood is hard, close-grained, and of a reddish brown color. The exuding balsam apparently was long used by the natives and, after the conquest by Cortes, exported to Spain in substantial quantities for use both as a perfume and as a vulnerary. The resin, commonly known as liquidambar, copal balsam, copalm, Honduras balsam, or white Peru balsam, collects naturally as a pathological product in secretion reservoirs under the bark in old trees, being rarely found in young ones. Not all *Liquidambar* trees produce balsam; sometimes completely sound trees more than ten years old are tapped in vain. During the first World War the American product came into wider use due to scarcity of the Asiatic variety which it now far surpasses in popularity.

American styrax is produced chiefly in Honduras, lately to a small extent also in Guatemala.

Honduras Styrax

BY far the most important commercial quality of American styrax originates from Honduras, where producing regions are located around the small town of Santa Barbara. The balsam is exported mainly from Puerto Cortes. According to Watermeyer,[16] Asiatic styrax from *Liquidambar orientalis* L., the Old World prototype, for many years formed the chief source of supply for the entire world. With the beginning of the first World War and the accompanying shortage of imported materials, it became exceedingly scarce and a large portion of the supplies that found their way to the United States were of inferior quality, having been deprived of some of their natural aromatic constituents. As the balsam is a valuable perfume material, for soaps as well as toilet preparations in general, and an important ingredient of many pharmaceutical preparations, it became necessary to turn to our own resources for a future supply.

Liquidambar styraciflua L. is widely distributed throughout our Southern States, and its product, the so-called "sweet gum" has been long and favorably known. However, the high cost of labor prevailing in our country made it difficult to utilize this source except for small lots. In Honduras, on the other hand, conditions permit large-scale collection of the balsam. It is mainly from this source that our domestic market has been supplied with American styrax in past years.

Unfortunately, the Honduran forests are not easy to penetrate, and the difficulties connected with collecting the gum are such that only the poorer natives can be induced to engage in this work. The cost, accordingly, is somewhat higher than that which formerly prevailed for the Asiatic grade, but compensated for by the fact that this product of the American continent is richer in aromatic constituents and generally superior in quality to the Asiatic styrax.

Slight excrescences develop under the bark and gradually enlarge into pockets in which the balsam secretes. When these pockets are located near the base it is unnecessary to destroy the tree; but many are high up, in which case the tree must be felled. The laborers generally work in groups of four, and a full day is frequently required to bring down one well matured tree. On an average, not more than one tree in each one hundred square yards is found worthy of attention, the others not containing balsam due to age or other conditions of growth. Balsam-bearing trees are easily recognized by the above mentioned excrescence, but only an expert can judge from the outward appearance whether the pocket actually contains any balsam. The pockets hold from four to eight pounds of balsam which represents the content of two to four bottles respectively.

Liquid ambar tree with long leafed pine trees. Photo courtesy of Carlos Schaeuffler.

A cut is made in the excrescence and, as in collecting the sap of the rubber tree, a small gutter inserted, its free end leading into a container. The viscous liquid flows very slowly. When the container is full the contents are emptied into a larger one holding about 25 bottles or 50 pounds.

The most difficult part of the project consists in getting the balsam out to civilization; this can only be accomplished by transporting the 50-pound containers on the shoulders of the natives. Frequently ten to twelve miles must be covered in this way before the remainder of the journey can be made on muleback. The country is primitive, of rugged topography; no roads exist; violent and sudden rain storms add to the dangers and difficulties of those engaged in the enterprise. Not infrequently a mule with native and styrax goes over a precipice, entailing considerable financial loss to the manager of the expedition. Collection of this balsam, therefore, forms one of the hardest tasks the natives are called upon to perform.

Unfortunately, the felled trees represent an economic loss, as there is no way of utilizing the lumber at its source or bringing it down to civilization. As yet, no attempt has been made at reforestation; and, since many years are required to produce the deposits, it is conceivable that the supply may eventually be exhausted unless new sources are discovered.

Guatemala Styrax

PRODUCTION of styrax in Guatemala has not yet reached any real commercial importance; it is at present performed only on a small scale, due to the lack of local buyers. Yet, samples analyzed recently in the New York laboratories of Fritzsche Bros. proved to be of good quality and it seems opportune, therefore, to describe this new industry.

According to Carlos Schaeuffler of Retalhuleu, Guatemala,[17] the producing regions of styrax (Estoraque or Liquidambar) in Guatemala are located in the Departments of Alta Verapaz, Zacapa, and Chiquimula. The tree from which this resin is extracted grows in a moderate and humid climate, at altitudes ranging from 2,500 to 5,000 feet. In Guatemala *Liquidambar* trees are not planted or specially cultivated; they grow wild and usually stand in groups among longleaf pine trees. Extraction of resin is begun when the trees are about ten years old, younger ones not yielding any resin.

In Guatemala two methods are employed for extracting styrax:

a) Box Method—Casillas

A groove, running diagonally across the trunk and inclined inward, is cut with an axe at the height of approximately 2 feet above the ground. From the upper end of this groove two or three canals, or strips, are cut into the sapwood in a "v" shape. These strips induce the flow of resin, which runs along the canals into the groove from where it is removed with a spoon and transferred into tins or any other receptacles. At first it takes two to three months, depending on weather conditions, until the groove is filled, but later the resin flows more freely. After approximately nine months, additional canals or strips are peeled off and the old ones scraped, which procedure opens up new passages for the flow of resin. On old trees as many as six to ten grooves with their corresponding strips can be cut at different heights.

b) Deposit Method

Many *Liquidambar* trees have natural deposits of resin beneath the bark, probably provoked by some injury to the sapwood by bugs. These deposits can be detected by outgrowths on the tree trunk and also by the texture of the veins; in either case quite some experience is required to locate trees which have natural deposits. If these deposits are at a height which can be reached from the ground, a hole is drilled and the resin which flows from this deposit collected in some container. If the deposit cannot be reached from the ground, the tree must be felled and tapped on the ground.

The collected resin is heated in a water bath, whereby coarse impurities, such as particles of bark, sapwood and bugs, rise to the surface and are removed. While still hot, the resin is roughly filtered through cheesecloth to remove the finer impurities

and then stored in five-gallon tins or iron drums.

Liquidambar trees in the region described above change their foliage once a year, from January to March. During this period no resin flows. The most intensive flow is observed during the warm and rainy season from April to August, especially during the month of June.

The color of raw styrax varies slightly with the altitude at which the trees are located. Experience has shown that styrax from trees at lower altitudes has a yellowish color, from trees at higher altitudes more of a greenish color. There is no difference in color according to age of the tree or season. Crude Guatemala styrax is not processed locally, but sold on the market in raw condition.

In order to stimulate rapid flow of the styrax, Mr. Schaeuffler applied a 40 per cent solution of sulfuric acid to the open wound. This procedure yielded a more liberal flow of resin for a few days. However, through action of the sulfuric acid, the fibers of the surrounding sapwood were completely burnt and killed. After a few days the flow stopped entirely.

Physico-Chemical Constants of American Styrax

AMERICAN styrax is a semi-solid, sometimes solid mass, softened by gentle warming. The crude balsam contains much less water than the corresponding Asiatic product and is, therefore, of higher quality.

The specifications of the U.S.P. XII for styrax apply to both the Asiatic and the American type. Crude American styrax imported from Honduras and Guatemala and analyzed in our New York laboratories showed constants which varied between the following limits:

Loss on drying	7.0% to 20.0%
Alcohol-insoluble residue	0.2% to 5.0%
Alcohol-soluble residue	85.0% to 95.0%
Acid value of styrax purified according to the U.S.P. XII test	36 to 49
Saponification value of styrax purified according to the U.S.P. XII test	160 to 194
Color	Gray; occasionally pale brown.
Appearance	Opaque, usually showing separation of water and containing specks of impurities or foreign matter. Usually free flowing.

The alcohol-insoluble portion of certain lots of styrax occasionally exceeds the 5 per cent limit as prescribed by the U.S.P. XII. This is an indication of the age of the material and is caused by polymerization of styrene.

Commercially purified American styrax processed in our New Jersey factory possessed the following constants:

Acid value	37.8 to 47.6
Saponification value	168 to 186
Color	Brown
Appearance	Clear, viscous, liquid.

Oil from American Styrax

DISTILLING American styrax, we obtained yields ranging from 21.5 to 30.5 per cent. These figures, however, are not absolutely correct because we distilled not only the crude styrax but also residual material remaining after the purification of crude styrax. Gildemeister and Hoffmann[18] indicate yields of from 15 to 20 per cent. The oils of own distillation had constants which varied between the following limits:

Specific gravity at 15°	0.986 to 0.998
Optical rotation	+0°41′ to +1°45′
Refractive index at 20°	1.5325 to 1.5391
Acid value	2.8 to 9.4
Saponification value	4.7 to 32.1
Ester value after acetylation	233.3 to 238.9
Total alcohol calculated as cinnamic alcohol	67.6% to 69.7%
Congealing point	+10° to +20°
Color	Pale to light yellow

Employment

STYRAX is a stimulating expectorant and feeble antiseptic which, years ago, was used against various catarrhs, but at present is seldom employed in medicinal preparations except as a constituent of the compound tincture of benzoin. When mixed with two or three parts of olive oil and applied externally, liquid styrax was found to act as a local remedy in cases of scabies.

Styrax finds wide application for the isolation of cinnamic alcohol by saponification of cinnamyl cinnamate. It is also used in considerable quantities for the scenting of soaps. Due to its content of high boiling constituents, styrax acts as a most efficient

(*Turn to Page 71*)

Chemical Composition

THE chemistry of American styrax oil is similar to that of oil distilled from the Asiatic product. The following constituents have so far been isolated:

styrene (phenyl ethylene) $C_6H_5.CH = CH_2$	Identified as dibromide, m.p. 73°C., by von Miller.[19]
cinnamic acid	Free and in ester form.
phenyl propyl alcohol and *cinnamic alcohol* free and as *phenyl propyl cinnamate* and *cinnamyl cinnamate* (styracin)	These alcohols and esters were found in American styrax oil by Thoms and Biltz,[20] by Hellström,[21] by Burchhardt,[22] and by Tschirch and Werdmüller.[23] According to Tschirch and van Itallie,[24] American styrax, contrary to Asiatic styrax, does not contain any ethyl cinnamate or benzyl cinnamate.
vanillin	Is also present in American styrax.
several hydrocarbons C_5H_8, C_6H_{10}, C_9H_{12} and *a sesquiterpene* (b.p. 261-262°C.)	have also been found in American styrax oil.

New Fatty Acids

Azelaic and pelargonic acid developed commercially through accelerated war research

By Dr. L. D. Myers
Emery Industries, Inc.

AZELAIC acid, one of the newly developed organic acids, is now commercially available. This new saturated, aliphatic, dibasic acid which was produced heretofore only in the laboratory and whose large-scale production existed only in the mind of the research chemist, is now a member of the family of regular commercial aliphatic acids. But for the duration of the war, its commercial availability along with other new organic acids, will be greatly restricted for civilian uses. Post-war applications, however, will probably be numerous.

The almost complete disappearance of certain fats and oils from the market engendered by the situation in the Pacific, may be only temporary, but it brought about important developments in that field. In many cases the so called substitute whose current importance is underlined by these conditions, may well replace the original material and make industry independent of single sources of supply. Frequently, the new material is not a substitute at all but an entirely new product whose unusual properties will make a place for it. Azelaic and pelargonic acids, which are described here, may be cases in point. Certainly they are examples of the second factor, the speeding up of research and development programs brought on by industry's accelerated pace which began in 1939.

The formula of azelaic Acid, $(CH_2)_7$ $(COOH)_2$ shows nine carbons in the chain with a carboxyl group at each end. Its combining weight is 93 to 95. The commercial product is a fused, flaked solid, light tan in color which melts at approximately 96° Centigrade. While azelaic is only slightly soluble in cold water, it is infinitely soluble in hot water. It is soluble in cold alcohol and other strongly polar solvents. In general, the solubility in these solvents increases upon heating. As might be surmised, the solubility in non-polar organic solvents is limited by the presence of the carboxyl groups.

The strength of azelaic as an acid is indicated by its ready reaction with cold solutions of such weak alkalies as sodium bicarbonate. Therefore it forms metallic salts quite readily. The salts of the alkaline earths are extremely water soluble while those of calcium, aluminum, etc, are insoluble, both in water and in the more common solvents.

Perhaps the most interesting properties of compounds of azelaic acid are found among its esters, particularly those made from the monohydric alcohols and alcohol ethers. These compounds usually have high boiling points and are compatible with many of the synthetic resins. This suggests many uses in the field of plasticizers where boiling point ranges and compatibility are of prime importance. Like other dibasic acids, azelaic acid reacts with glycerine or some other suitable polyhydric alcohol to form alkyd resins, which, however, differ from those made from phthalic anhydride or similar short chain anhydrides. The latter are quite hard and brittle while those from azelaic acid are soft and ductile. This property is important because it is frequently difficult to obtain flexibility and adhesion by oil modification alone.

Other products included among these new fatty acids are a series of low molecular weight, monobasic, aliphatic acids in which the rather unusual acid, pelargonic, predominates. It too may be described as a straight chain acid containing nine carbon atoms which is liquid at room temperature. While only sparingly soluble, even in hot water it is soluble in most organic solvents. The alkaline metal salts are very soluble and although not very high in detergency, exhibit other interesting properties. Solutions of the heavy metal salts precipitate the corresponding metallic "soaps". A number of the esters of these acids, particularly those of the polyhydric alcohols, have unusual solvent properties along with high boiling points which again bring plasticizers to mind.

It is still too early to do more than project possible applications of these new fatty acid derivatives. But a casual study of the properties of their compounds suggest many diverse fields of investigation including work in textile applications, modification of resins, plasticizers for protective coatings of every kind, etc. So far, there seem to be only a few lines of investigation open in the detergency field, as none of the alkaline earth salts themselves have very high detergent properties.

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PALMITIC ACID
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OXALIC ACID
POTASSIUM CARBONATE
SAL AMMONIAC
SALT
SAL SODA
SILICATE OF SODA
SODA ASH
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CASTOR OIL
COCOANUT OIL
CORN OIL
COTTONSEED OIL
LARD OIL
NEATSFOOT OIL
OLEIC ACID - RED OIL
OLIVE OIL
OLIVE OIL FOOTS
PALM OIL
PALM KERNEL OIL
PEANUT OIL
RAPESEED OIL
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NEWS

Pacific Borax Supt. Dies

Frederick W. Korkill, superintendent of the Pacific Coast Borax Company, died September 27 at his home at 1119 South Haworth Avenue, Los Angeles. He was 58 years old, and is survived by his widow, Mrs. Mary C. Korkill; a son, Frederick Korkill, of New York; and two daughters, Miss Patricia Korkill of Los Angeles and Mrs. Charles Brown of Oakland.

T. Beyer Naval Lieutenant

Theodore Beyer, an attorney who has recently been working with the Association of American Soap and Glycerine Producers assisting in the interpretation of government orders and other associated work has just been commissioned as a Lieutenant (J.G.) in the U. S. Navy. He has reported at Princeton, N. J. for indoctrination.

Johnson C-P-P Atlanta Sales Mgr.

J. L. Johnson succeeds the late W. E. Stieghorst as sales manager of the Atlanta, Ga., branch of Colgate-Palmolive-Peet Co., New Jersey. Mr. Johnson was formerly sales manager of the Chicago district.

Shulton Man On Market Tour

Frederic I. Rowe, who joined Shulton, Inc., New York, in September as manager of the export division, left October 8, to conduct a market survey of Latin American countries. He will visit Mexico, Columbia, Venezuela and Cuba, returning to New York around the first of the year. Mr. Rowe, a graduate of Rutgers University's School of Pharmacy, spent 22 years in the export pharmaceutical and toiletries business with Sydney Ross Co., travelling extensively through the West Indies.

McElroy New P. & G. V.-P.

Neil H. McElroy, formerly manager of advertising and promotion

NEIL H. McELROY

was recently elected to the board of directors and then to vice-presidency in charge of advertising and promotion for Procter & Gamble Co., Cincinnati, last month. At the annual meeting of the company, Frederick V. Geier, president of Cincinnati Milling Machine Co. was elected to the board, bringing the membership to 14.

TGA Office Moves

The Toilet Goods Association recently moved to new quarters in Room 1247, *Time* & *Life* building, 9 Rockefeller Plaza, New York, 20, N. Y. There has been no change in the telephone number which remains COlumbus 5-5443.

Akerite Moves; Expands

Akerite Chemical Works, Inc., Chicago, is now located in new and larger quarters. General offices and laboratory have been moved to 6041 Northwest Highway; the factory is at 5514-20 Northwest Highway, Chicago.

George Hallett Leaves Ayer

George W. Hallett is no longer connected with Hariet Hubbard Ayer, Inc., New York, according to an announcement by Mrs. Lillian S. Dodge, president of that company.

Henriksen Joins Northam

Arthur Henriksen, formerly chief chemist for G. E. Ising Corp., essential oil house, Flushing, New York, recently resigned from that firm to become chief chemist in charge of production at the White Plains, N. Y., plant of Northam Warren Corp., Stamford, Conn. A graduate of Columbia College of Pharmacy and Pratt Institute, Mr. Henriksen is a former vice-president of Norda Essential Oil & Chemical Co., New York, and before that worked for Palmolive Co.

Day Chemical Moves, Expands

Expanding by moving to new and larger quarters, Day Chemical Co., shaving, dental cream and pharmaceutical manufacturer, Newark, N. J., is now located at 713 South 14th Street, Newark 3, N. J. Both offices and warehouse for the firm, which also does private brand liquid and cream tube filling, are located at the new address. The company, founded in 1929, was formerly located at 70 Marshall Street, Newark.

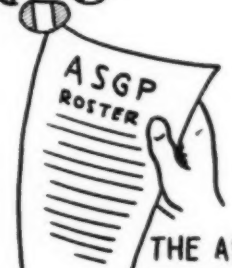
Glycerin Allotment Eased

The predicted allocation of glycerine for civilian commodities beginning Oct. 1, was revealed to be 90 per cent of the average monthly consumption of 1940 for dentifrices, soap, shaving cream, shampoos, hair tonic, hand and face creams. Drugs, such as liniments, proprietary pharmaceuticals, etc., were given 100 per cent of base period allotment.

REMEMBER?

ten years ago

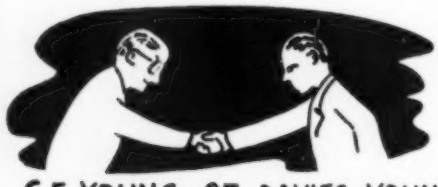
HEATED DISCUSSIONS WERE CURRENT AMONG RENDERERS ON THE NEED FOR TARIFFS ON TALLOW AND GREASE



THE ASGP, WITH 100 MEMBER FIRMS, WAS PREPARING FOR ITS BIGGEST ANNUAL MEETING TO DATE

LOUIS GAMPERT JOINED FELTON CHEMICAL CO. AS V.P. AND DIRECTOR

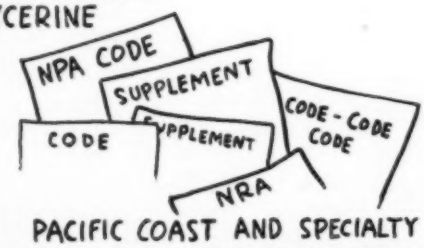
IOWA SOAP CO. LAUNCHED A HOUSE ORGAN



C.F. YOUNG OF DAVIES-YOUNG SOAP CO. WAS APPOINTED ADVISOR FOR THE SOAP AND GLYCERINE INDUSTRY BY NRA

THE MILWAUKEE PLANT OF LAVO CO. OF AMERICA HAD A $25,000 FIRE

GRAFTON B. PERKINS, ADV. MGR. OF LEVER BROS. WAS ELECTED A DIRECTOR OF ABC



PACIFIC COAST AND SPECIALTY PRODUCTS GROUPS WERE BUSY DRAWING UP CODE SUPPLEMENTS TO THE BASIC NRA SOAP CODE

Soaps at Safety Congress

SEVERAL manufacturers of industrial soaps were on hand for the exposition held in connection with the National Safety Congress in Chicago last month, where they displayed products with special appeal to the women war workers or to combat dermatitis hazards peculiar to war production operations.

Lightfoot Schultz Co., New York, distributed samples of "Treet," a powdered hand soap recently put into production, with six distinctive features as an "on-the-job" soap for women workers. Also shown was a second new product, "Transol," a sulfonated vegetable oil formula for employees subject to unusual occupational hazards which leave the skin dry or cracked. A. J. Caldwell, vice president, was on from New York to assist W. J. Pemberton, midwestern supervisor, J. R. Weilgot, Chicago district manager, and field representatives in the booth.

West Disinfecting Co., Long Island City, N. Y., emphasized "Sulpho Hand Cleaner," for dry skin conditions created in handling solvents, degreasing agents and other war materials. Also shown was a new ordnance liquid soap, designed for workers in contact with TNT and other ingredients of munitions and explosives. Attention was given to "Westamine," an odorless spray disinfectant for plant sanitation and a 24-page booklet on "Production Safeguards Against Dermatitis" was distributed. Wm. Flatow, Jr., in charge of sales promotion in the eastern office, was present to assist R. O. Jackson, Chicago district manager and others of the local sales staff.

G. H. Packwood Mfg. Co., St. Louis, featured sudsless "Pax Super-X" skin cleaner. This new cleaner is being offered in place of the company's regular line of "Pax" skin cleaners for industrial plant use, the company's industrial safety hygiene service engineer, W. T. Schroeder, of St. Louis, explained. Manufacture of their older, more familiar products will be resumed as soon as restrictions permit, he stated.

Kolar Laboratories, Inc., industrial division, Chicago, showed two products, "Eleven Thirty-two," a protective hand cream, and "Foaming Oil Cleaner," for conditioning the skin, and distributed a 12-page booklet on "Industrial Skin Cure—or Lost Man Hours."

C. B. Dolge Co., Westport, Conn., displayed cutting oil disinfectants, hand cleaners and products for control of athlete's foot. C. L. Weirich in charge.

Onox, Inc., San Francisco, demonstrated their "Onox" skin toughener for athlete's foot prevention, Leon C. Egner representative in charge.

Milburn Co., Detroit, featured "Ply," for dermatitis protection, also a line of "Ply" safety clothing for workers. Thos. J. Berk and W. Graham in charge.

E. I. Du Pont de Nemours & Co., Wilmington, included "Pro-Tek," a hand protective cream in their display of other safety equipment. Mine Safety Appliances Co., Pittsburgh, also showed their protective hand cream, "Fend."

Finnell System, Inc. Elkhart, Ind., and Hild Floor Machine Co., Chicago, gave demonstrations of their lines of floor cleaning and maintenance equipment.

Walter G. Legge Co., New York, presented their line of non-slip floor polishes and floor treatment materials, including "Conducote," for dissipating accumulations of static electricity. Walter G. Legge, company president, in charge.

Other exhibits of interest to manufacturers generally included fire extinguishing apparatus, protective garments for women and men, goggles, gloves, shoes, ladders, containers for inflammable chemicals, first aid kits and innumerable other items for conserving manpower by reducing accident hazards. Aerosols for combatting tropical insects were shown in an official Army display of safety equipment developed to serve the nation's soldiers.

Offer New Upholstery Specialty

Pettingell & Fenton, Inc., New York advertising agency, has recently announced the debut of its own product, "Shyn-O-Way", a new chemical for removing shine from clothing and upholstery. The formula was developed by Professor Ralph McKee, formerly associated with Columbia University, and now engaged in chemical research for the Army. "Shyn-O-Way" is packaged in a carry-all kit containing a bottle of the product and a renapping cloth. It will be available at notions, drugs and household departments.

Boston BIMS End Season

The final golf party of the season for the BIMS of Boston was held at the Woodland Country Club, on Thursday, September 30. The session was well attended despite rain. The low gross award was won by Peter Forsman of the C. H. Forsman Co.; low net by M. E. Nourse of Howe & French, Inc., and the kickers handicap was won by Harold Ingham of Ingham & Co.

New Metal Cleaner

A new metal cleaner and degreaser called "Bionol" has been formulated by the Biofen Laboratories of Bridgeport, Conn. The compound is used in aqueous solution and is said to act effectively in 1-3 minutes at a temperature of 140° F. The chemical is described as a complex organic ester containing the amide and sulfate radicals.

Honor Standard Ex-Employee

Sgt. Julius Axman, formerly connected with Standard Synthetics, New York, has been awarded the medal of the Silver Star for his outstanding work in the Sicilian campaign. Sgt. Axman is a paratrooper, and was among the first group of Americans to visit the lemon groves of Sicily.

PQ Silicate—your constant factor

Today's manufacturing problems include so many variables, it is a relief to know that PQ Silicate quality remains the same. The uniform standard quality on which the soap industry has depended for more than three-fourths of a century is available to aid in keeping up detergency performance.

Outstandingly constant are the advantages you obtain from the soluble silica (SiO_2) content of PQ Silicates. You can still count on increased sudsing power, greater soil removal, prevention of redeposition of the soil when PQ Silicate is a partner in your formulas.

Your own research staff works busily on "new wrinkles", but please bear in mind when a problem involves silicate of soda, we are ready to consult with you.

Keep Posted on Silicates

Ask to be put on the mailing list to receive "Silicate P's & Q's" monthly. A ten minute message to those who use or could use silicates of soda.

PHILADELPHIA QUARTZ CO.

SILICATES OF SODA

125 S. THIRD STREET, PHILA., PA.

A new Daggett & Ramsdell, New York, gift box called "Mountain Heather" contains a chubby cake of pink bath soap in addition to the usual cosmetic complement found in this type of beauty kit. Five gifts in one package retail for $5.50. It will be one of numerous D & R Christmas gift packages.

A. C. Ruschhaupt, 81, Dies

August C. Ruschhaupt, 81, retired soap manufacturer, died Oct. 12, in a Fresno, Calif., sanitarium following a long illness. Born in Germany, Mr. Ruschhaupt came to the United States about 60 years ago and was employed by a New York soap manufacturing company. Later he went west and entered the employ of the Los Angeles Soap Co. as plant superintendent. Following this his brother Carl and he established a soap factory in Fresno, Calif., which they continued to operate until 1922 when they sold the business to a Los Angeles concern. More recently Mr. Ruschhaupt had been prominent in the petroleum field, both as a producer and jobber and was, at the time of his death, president of the California-Fresno Oil Company.

Mexican Soaper's Son In N. Y.

Juan Schwartz, a chemical engineering student at Massachusetts Institute of Technology whose home is in Mexico City, visited New York recently. He is the son of Theodore Schwartz, former superintendent of Cia Industrial de la Laguna, soap makers in Mexico.

G. W. Eisenlohr, 57, Soaper, Dies

Gustav William Eisenlohr, 57, vice-president in charge of production of M. Werk Co., soap manufacturers, Cincinnati, died as the result of a heart attack, October 19. He had been connected with M. Werk Co. for 30 years. A chemist, Mr. Eisenlohr was graduated from the old Cincinnati Technical School and Purdue University. A member for many years of the American Oil Chemist's Society, he had just returned home the previous Friday from the Society's Chicago meeting to celebrate his 23rd wedding anniversary. He was a member of Hanselmann Lodge, F. and A. M., Scottish Rite and Syrian Temple of the Shrine. Surviving are his widow, Mrs. Laura Gehrlein Eisenlohr; his mother, Mrs. Jerry Lesquereux Eisenlohr; and a sister, Mrs. Hubert C. Heuck. Funeral services were held October 22, at Dethlef's, Good & Keisch Funeral home, Avondale.

A. R. Robson, Fels V. P., Dies

A. Roy Robson, 60, vice-president of Fels & Co., Philadelphia, soap manufacturers, died Oct. 28, at his home, Sunnyview Farms, Goshenville, Pa., after a long illness. A graduate of the University of Pennsylvania, he was associated with Fels & Co. for 46 years and was director of purchase until 1927, when he was named vice-president of the company. Mr. Robson was a member of the War Production Board's advisory committee for the soap and glycerine industry. He leaves a widow, Mrs. Ethel M. Carr Robson; a son, Lieut. Alan R. Robson 3rd, U. S. Army Air Forces; a daughter, Mrs. William Gerson of Lansdowne, Pa.; his parents, Mr. and Mrs. Alan R. Robson; a brother, Horace, of Wyncote, Pa., and two sisters.

Katz Heads Florasynth

Dr. Alexander Katz, organizer, chief chemist and formerly vice-president of Florasynth Laboratories, Bronx, N. Y., perfuming materials, has just assumed the presidency of the company following the retirement of Louis A. Rosett. Dr. Wm. Lakritz becomes vice-president. He has been the organization's associate chemist for more than 20 years and has headed the Chicago office and its central and midwestern activities. Joseph H. Fein has been elected treasurer. As in the past he will continue in charge of the company's purchasing department.

Stanley Hunnewell Dist. Manager

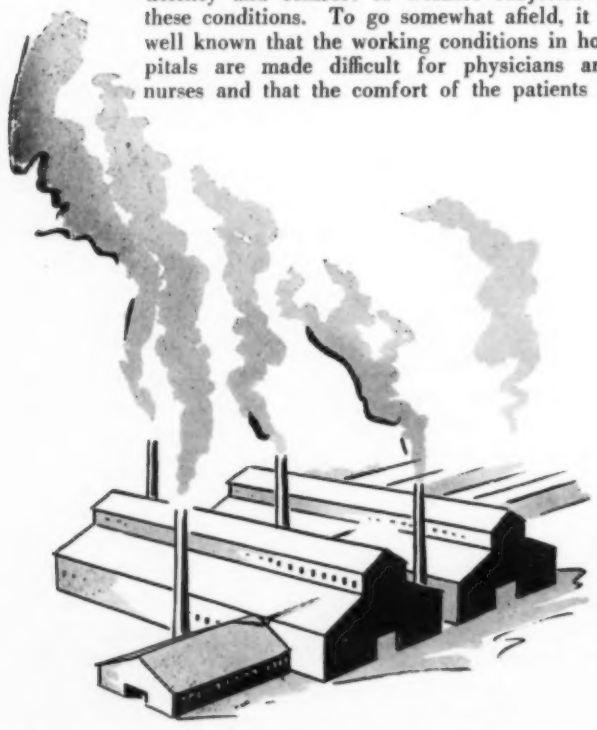
John T. Stanley, Jr., has recently been appointed district sales manager in North Carolina for Hunnewell Soap Co., manufacturers of scouring and polishing soaps, Cincinnati. Mr. Stanley will make his headquarters at Durham, North Carolina. He will be in charge of engineering as well as sales.

H. P. Trevithick Chemists' Head

Harry P. Trevithick of the bureau of chemistry of the New York Produce Exchange was elected president of the Association of Consulting Chemists and Chemical Engineers, Inc., Oct. 26, at the association's annual meeting at the Chemists Club, N. Y.

Odor Control with NEUTROLEUM

THERE is reason to believe that in many industries, today, unpleasant odors — due, for example, to manufacturing operations or processing, to the mustiness of old, rehabilitated factory buildings, to nearby plant refuse, etc. — are taking a heavy but unsuspected toll in the efficiency and comfort of workers subjected to these conditions. To go somewhat afield, it is well known that the working conditions in hospitals are made difficult for physicians and nurses and that the comfort of the patients is affected by the nauseating odors characteristic of certain types of disease.



To control offensive odors is no longer a baffling problem. Almost any plant or factory superintendent can remedy such condition quickly and inexpensively merely by the proper use of NEUTROLEUM. A few drops of this remarkable odor neutralizer placed in an open receptical in various parts of the affected premises will cover up or mask some of the most objectionable and persistent odors for a prolonged period of time. It may be employed also in the form of an aqueous spray made of two ounces of WATER MISCIBLE NEUTROLEUM in one gallon of lukewarm water.

The simplicity, effectiveness and economy of using NEUTROLEUM for all types of odor control can best be demonstrated by actual use. We shall be glad to consult with and supply testing samples of NEUTROLEUM to any plant or organization confronted with a problem of this character. When writing, please give a full explanation of conditions in order that we may advise you most helpfully.

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FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Relieve Mint Oil Shortage

CERTAIN larger users of oil of peppermint — those with sufficient inventories—have offered to stay out of the market for the balance of this year, thus helping correct a critical supply situation in this essential oil. Smaller food and drug firms thereby will be enabled to acquire an equitable share of the product, according to a report of the War Food Administration on a recent meeting of the Industrial Oil of Peppermint Users Advisory Committee.

The short supply of oil of peppermint is attributed to several factors, including the smaller than usual crop of peppermint this year due to unfavorable weather conditions, the elimination of imports of menthol from Japan, and increased demands for the product. These conditions made the recently announced control over distribution of the essential oil necessary, Food Distribution Administration officials pointed out. Industry representatives are reported to have concurred with FDA on the need for a limitation on users of oil of peppermint, thus insuring an equitable distribution of the supply.

Effective September 13, manufacturers, druggists and others who used oil of peppermint in the manufacture of any product in 1941, have been limited to the use of the equivalent of 30 per cent of the quantity used in the corresponding period of 1941. This is a temporary limitation, however, which will be advanced as soon as adequate data on inventories are obtained. Present indications are that approximately 500,000 pounds are now in the hands of dealers and producers.

Estimated requirements for this essential oil, as adjusted by the Industry Advisory Committee, total 1,250,000 pounds. Inasmuch as certain members of the industry — those having large inventories—have agreed not to purchase oil of peppermint from the 1943 production, the estimated requirements from this year's crop is reduced by approximately 450,000 pounds, leaving a balance of 800,000 pounds to be filled from an estimated supply of 500,000 pounds.

Industry representatives urged that action be taken to encourage farmers to plant a sufficient acreage of peppermint for 1944 and said that some price adjustments are needed to meet increased costs of production.

Oil of peppermint is one of the most important flavors in the manufacture of dentifrices, chewing gum and is also used in pharmaceutical preparations. It is also a source of menthol.

Among those industry members who attended the meeting of the Oil of Peppermint Industry Advisory Committee were: F. T. Dodge, president, Dodge & Olcott Co., New York; J. H. Blakney, director, Colgate-Palmolive-Peet Co., Jersey City, N. J.; E. F. Berg, E. R. Squibb & Son, Brooklyn; Henry F. Woulfe, vice-president, Pepsodent Co., Chicago, and A. J. Todd, president, A. M. Todd Co., Kalamazoo, Mich. A. L. Kalish of the special commodities branch, Food Distribution Administration, presided as Government chairman of the meeting.

New General Mills Soy Plant

Purchase of the properties of American Crystal Sugar Co., Belmont, Iowa, by General Mills, Inc., Minneapolis, was announced late last month by James F. Bell, chairman of the board. The plant will be converted into a soybean processing plant, the announcement stated, and went on to explain that the war-time necessity for added soybean producing capacity to meet protein and oil shortages is the immediate reason for General Mills' entrance into this field. Whitney H. Eastman, recently appointed president of General Mills' vegetable oil and protein division, will be in charge of the newly acquired plant.

J. A. Baader, Armour, Retires

J. A. Baader, after 44 years of service, more recently in charge of the New England territory, is retiring from the soap works division of Armour & Co., Chicago. F. E. Leist, formerly supervisor of Armour's New Jersey plant succeeds Mr. Baader.

New packages, new soaps and new odors by Chanel, Inc., New York, include Chanel No. 5 toilet soap, right; the new gardenia odor hand soap, center, rear; a new guest package containing a dozen hand sized cakes of soap, front and center; and a large individual bath cake in box at left, center. Photo by Stein.

P&G Quarter Net Up

Increased consolidated net earnings of $5,153,397 for the quarter ending Sept. 30, were reported Oct. 22, by Procter & Gamble Co., Cincinnati. The third quarterly earnings resulted in an equivalent of 78 cents a share on common stock as compared with earnings of $4,515,649 or 68 cents a common share for the corresponding period in 1942. The report did not include the earnings of English and Canadian companies except as they have been made available in this country in United States funds and also excludes defense companies. Provision was made for Federal income taxes of $4,475,000 and net excess profits tax of $1,426,500.

Brillo Co. Fined $8,000

Brillo Mfg. Co., Brooklyn, was fined $8,000 for violating WPB regulations governing the use of steel in the Eastern District Court of New York, Brooklyn, by Judge Robert A. Inch, late last month. Milton Loeb, president of the company, was fined $5,000 on the same charges. Charged with "willful violation" of Order M-126, which for a time established quotas for the end-use of steel and later prohibited such use for the manufacture of steel wool, the company was said to have exceeded its quota by 400,000 pounds between May 6 and June 20, 1942, and in the remainder of the year illegally produced 800,000 pounds of steel wool pot scourers. Brillo Mfg. Co. pleaded guilty after the WPB compliance division placed the charges in the hands of the Department of Justice.

Chemical Exposition Dec. 6-11

A general forecast, based on advance information, indicates that more than half of the displays at the 19th Exposition of Chemical Industries will relate to machinery and manufacturing equipment, with technical equipment including research apparatus, instruments and controls and processing materials filling in the remainder of the picture. This year's Exposition, shifted from Grand Central Palace to Madison Square Garden —49th St. and Eighth Ave., New York—will be held Dec. 6-11. Owing to the secrecy surrounding many branches of war production, the 1943 Exposition has been deprived of many exhibits which would otherwise have been shown. These, however pertain solely to the war effort and in many instances are unsuited for commercial exploitation.

Form Textile Chem. Corp.

A newly organized firm to manufacture soap, oils and cleansers, is Textile Chemical Corp., located at Fall River, Mass.

The Fat Salvage Campaign was given considerable publicity in a float entered by the Jos. Schlitz Brewing Co., Milwaukee, in a "Salvage for Victory" parade held in Milwaukee September 15. The parade, held under the auspices of the WPB, was viewed by an estimated 50,000 Milwaukee residents. More than one hundred floats called dramatic attention to the importance to the war effort of the salvage of fats, tin containers, scrap metal and paper.

Bon Ami Earnings Rise

Bon Ami Co. and subsidiaries, New York, showed an increased net profit for the nine months ended Sept. 30, of $777,168 after a provision of $795,707 for income and excess profits taxes, equal to $3.63 a share on the Class A stock, under the participating provisions, and $2.17 a share on Class B stock. Net profit for the first nine months of 1942 ending Sept. 30, was $737,877, or $3.42 a share on the Class A and $2.07 a share on the Class B stocks, after taxes of $674,345.

Chemistry Made Easy—By Cornelia T. and Foster D. Snell. Published by D. Van Nostrand Co., New York. 4 vols. approx. 1200 pages 5½ x 8¼. $7.95.

This new elementary text on chemistry is intended primarily for the student who plans to acquire a knowledge of the subject without the assistance of an instructor and without the aid of laboratory work. Volume one covers the theory of inorganic chemistry, and volume three discusses the aliphatic and aromatic compounds of organic chemistry. The theory and underlying principles of chemistry are explained in simple and readily understandable terms, and simple experiments descriptive of the subjects covered are described. It would seem to be perfectly possible for the serious student to acquire a simple working knowledge of the subject of chemistry from study of these three volumes.

The fourth volume differs from other members of the set in that it is a reference book rather than a text. It is a reprint of a book originally published in 1939 under the title "Chemicals of Commerce", and contains a list of industrial chemicals and commercial raw materials, offering much useful information on the occurrence and employment of the various commercial chemical products that the reader has studied in the first three volumes. It is a brief non-technical, commercial chemical dictionary, containing a wealth of authentic, concise and up-to-date information on the chemicals of commerce.

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Like a magnet the Great Falls drew explorers into the untracked forests of the Niagara region. It possessed a fascination for those early pioneers . . . men with imagination, vision and a spirit of adventure. And to later Americans it possessed the same fascination, for it offered unlimited possibilities for industrial growth. As a result Niagara is today the center of a vast industrial area . . . the powerhouse of an increasing number and variety of business and manufacturing activities.

Of these Niagara Alkali Company is among the oldest and most progressive. With a long record of pioneering achievements in the field of chemicals, Niagara Alkali is today setting a new pace in the production of materials vital to the winning of the war. Never before has the long experience and the advanced knowledge of Niagara's personnel proved its value so conclusively as in the company's present war production record.

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AN EXPLANATION

concerning the present

LANOLIN & WOOL GREASE

SITUATION

as governed by FDO 76, Part 1460—Fats and Oils Conservation and Distribution of Wool Fat

As America's largest supplier of Lanolin and kindred products, it is our opinion that an explanation should be made to industry as a whole, and to those who have favored us with their patronage in particular.

The entire crux of the currently difficult situation can be found in the opening paragraph of the War Food Administration order which places wool fats on a strict monthly allocation basis. It reads as follows—

> *"The fulfillment of requirements for the defense of the United States will result in a shortage in the supply of wool fat for defense, for private account and for export; and the following Order is deemed necessary and appropriate in the public interest and to promote the national defense."*

At present, requirements based on military needs have caused a limitation of authorizations by the WFA of monthly allotment requests. It is our hope and our sincere belief that this is a temporary expedient to be alleviated as government requirements are met.

Your industry, which has grown by tremendous strides even during these war years, has the ingenuity to carry on in the face of this new obstacle. When restrictions are lifted, supplies of premium quality Nimco Brand Lanolin and Neutral and Common Degras will be available again to all. Let us hope that further successes on the field of battle will speed that day.

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The oil is an American product . . . manufactured by the Tiona Petroleum Corporation of Philadelphia . . . and the containers were built by Crown to rigid specifications drawn up by American Army and Navy officers collaborating with British officials who well knew the conditions to be met in desert warfare.

Oil from the United States . . . in Crown Cans from the United States . . . helped in the drive that brought the famous 8th Army to its junction with the troops from the United States and the elimination of the Afrika Korps.

The African front is no more . . . but the war goes on . . . and on every front Crown Cans are doing their part to carry and safeguard all kinds of supplies needed by the fighting men of the United Nations.

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BIDS AWARDS

Veterans' Green Soap Awards

In recent openings for miscellaneous supplies by the Veterans Administration Procurement Division, Washington, D. C., the following awards have been made: 5,400 pounds of green soap: Crystal Soap & Chemical Co., Tacony, Pa., $594; and 25,000 pounds of green soap: Eastern Chemical Co., Baltimore, $2,725.

Treasury Auto Polish Award

The following bids and awards have been made public in connection with a recent Treasury Department Procurement Division, Washington, D. C., opening for miscellaneous supplies: 202 gallons of automobile polish, R. M. Hollingshead Corp., Camden, N. J., 98c a gallon (accepted); Unity Sanitary Supply Co., New York, $1.65 a gallon; 14,062½ pounds of grit hand soap, Colgate-Palmolive-Peet Co., (only bidder) $2.64 a case (accepted).

Silver Polish Award to Baker

C. P. Baker, Philadelphia, entered a bid of 16c a pound on 700 pounds of silver polish in a recent opening for miscellaneous supplies by the Philadelphia Navy Yard, Philadelphia, and the bid was accepted. Other bids included those of Cando Co., Boston, 24c; Imperial Products, Philadelphia, 24c; and Solarine Co., Boston, 23.5c.

Sole P.O. Hand Soap Bid

In a recent opening for miscellaneous supplies by the Post Officer Department, Washington, D. C., Unity Sanitary Supply Co., New York, was the only bidder on 10,000 cakes of grit hand soap. Unity's bid was 22c.

Penetone Low on Liquid Soap

The following bids were received in a recent opening for miscellaneous supplies by the U. S. Government Printing Office, Washington, D. C., 2,220 gallons liquid soap; Harley Soap Co., Philadelphia, 38c a gallon; Crystal Soap & Chemical Co., Tacony, Pa., 38.5c; Du-Rite Chemical Co., Brentwood, Md., 37.95c and Penetone Corp., Teaneck, N. J., 35c.

Disinfectant Award to Huggins

The bid of 56c by James Huggins & Son, Malden, Mass., on 4,950 gallons of disinfectants was accepted in a recent opening for miscellaneous supplies by the Treasury Department Procurement Division, Washington, D. C. Other bids were those of Crystal Soap & Chemical Co., Tacony, Pa., 67c a gallon and James Good, Philadelphia, 62c.

Veterans' Glycerine Bids

The following bids were entered on 4,000 pounds of glycerine in a recent opening for miscellaneous supplies by the Veterans Administration Procurement Division, Washington, D.C.: Armour & Co. of Delaware, $810; Colgate-Palmolive-Peet Co., Jersey City, N. J., $810; C. J. Schellings & Co., $810; Merck & Co., Rahway, N. J., $1,164.

Navy Roach Powder Award

In a recent opening for miscellaneous supplies by the Philadelphia Navy Yard, the following bids and awards were announced on 1,440 pounds of roach powder: A. G. Mattison, Portsmouth, 22c a pound (accepted); Parley F. Harris, Baltimore, 44c; Soilicide Laboratories, Montclair, N. J., 27c.

Philadelphia Navy Awards

The following bids and awards have been published in recent openings for miscellaneous supplies by the Philadelphia Navy Yard. 6,000 pounds of tallow; Independent Manufacturing Co., Philadelphia, 24c a pound; Neatsfoot Oil Refineries, Philadelphia, 20c; Wm. McDonagh & Sons, New York, alternate $1,177.50 total bid or $1,125 (accepted); 24,000 bars of toilet soap; Procter & Gamble Distributing Co., Cincinnati, 4.752c; Armour Soap Works, Chicago, 4.5c; Colgate-Palmolive-Peet Co., Jersey City, N. J., total $921.60 (accepted).

Low Degreasing Compound Bids

Among the low bids received in a recent opening for miscellaneous supplies by the New York Navy Yard, New York, were the following on 5,280 gallons of noninflammable, nontoxic liquid degreasing compound: Fuld Bros., Baltimore, 47c, including 96 drums at $1.10 each; Sanitary Soap Co., Paterson, N. J., 49c, including 96 drums at $1.25 each; and Curran Corp., Malden, Mass., 59c, including 96 drums at $1.25 each.

Tar Soap Award to Stanley

John T. Stanley, the sole bidder, received the award on 700 pounds of tar soap at 19c a pound in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C.

WFA Insecticide Award

In a special purchase for miscellaneous supplies by the War Food Administration, Washington, D. C., recently, California Spray Chemical Corp., Elizabeth, N. H., was given the award of 3,000 gallons of Volck insecticide at 55c per gallon.

Guenther Addresses Chi. Club

Dr. Ernest S. Guenther of Fritzsche Bros., New York, a well-known authority on essential oils, was guest speaker at the Oct. 28 luncheon meeting of the Chicago Drug & Chemical Association. For an hour he entertained club members with a showing of his colored motion picture, "Essential Oils and Their Production in the Western Hemisphere," and accompanied this with tales of his travels during the past seventeen years to study essential oil production methods in remote sections of the globe. The luncheon was held in the Union League Club's Crystal Room.

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TRADE MARKS

The following trade-marks were published in the October issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Marks

KK—This in upper case letters beneath a "v" of double line circles and between two stars for soap and cleaning preparations. Filed May 10, 1942 by Fitzpatrick Bros., Chicago. Claims use since Nov. 10, 1942.

POLIUM—This in extra bold, upper case outline letters above a skillet into which a stream is pouring for cleaning and scouring powder. Filed May 20, 1943 by Baribeau & Fils, Levis, Canada. Claims use since May 16, 1942.

CLUB—This in extra bold upper case letters for aluminum, general household, rug and upholstery cleaner and silver polish. Filed June 21, 1943 by Club Aluminum Products Co., Chicago. Claims use since Mar. 1943.

HURIKLENE—This in extra bold, upper case italic letters for liquid glass, silverware, chrome and tile cleaner. Filed July 12, 1943 by Huriklene Chemical Co., Bennington, Vt. Claims use since June 23, 1943.

TAR-ZO—This in bold upper case letters for soap. Filed July 7, 1943 by John T. Stanley Co., New York. Claims use since Apr. 1935.

NEWS—This in extra bold upper case letters for cleansing preparation for general household use. Filed Jan. 9, 1943 by G. F. Brown Co., Philadelphia. Claims use since April, 1932.

PYMEX—This in upper case shadow letter on a pennant background for insecticide. Filed July 7, 1943 by Hill-Ric Corp., New York. Claims use since Apr. 1, 1942.

N-P—This in upper case extra bold letters for parasiticides. Filed July 28, 1943 by California Spray-Chemical Corp., Wilmington, Del. Claims use since May 24, 1940.

JITTERBUG—This in extra bold upper and lower case letters for insect repellent. Filed July 31, 1943 by Becker-Bischoff Chemical Corp., St. Louis. Claims use since June 26, 1941.

WHISTLCLEAN — This in bold upper case letters across a scrubbing brush and pail for chemical cleaning compound. Filed June 4, 1943 by American Oil And Disinfectant Corp., New York. Claims use since Sept. 15, 1941.

JANEX—This in bold upper case stencil letters for detergents. Filed July 3, 1943 by Arkansas Co., Newark, N. J. Claims use since April, 1937.

ACIDOSE—This in bold upper case leters for detergent cleaning preparations. Filed Aug. 2, 1943 by Turco Products, Inc., Los Angeles, Calif. Claims use since May 1, 1938.

V-AIR—This in bold script letters for volatile liquid chemical for neutralizing odors. Filed June 29, 1943 by Vapor Chemical Corp., New York. Claims use since Apr. 1, 1943.

HYDRO-CIDE—This in extra bold upper case letters for germicidal deodorant. Filed Aug. 5, 1943 by Brunswick-Balke-Collender Co., Chicago. Claims use since May 12, 1942.

GNB-A—This in bold upper case letters for insecticides. Filed Aug. 6, 1943 by Geigy Co., New York. Claims use since July 12, 1943.

RAT-NOTS—This in bold upper case letters for rat exterminators. Filed Aug. 10, 1943 by Nott Manufacturing Co., Mount Vernon, New York. Claims use since June, 1936.

OLD SMOOTHIE—This in bold upper case letters for polishing wax. Filed June 21, 1943 by Golden Glint Co., Seattle, Wash. Claims use since Feb. 25, 1943.

MARVAROK—This in reverse letters on a black background for cleansing compounds. Filed Oct. 26, 1942 by Antiseptol Co., Inc., Chicago. Claims use since June 21, 1941.

KIRKMAN CLEANSER—This in reverse letters on a fanciful design showing three boys and three girls in Bavarian type costume for scouring cleanser. Filed May 25, 1943 by Colgate-Palmolive-Peet Co., Jersey City, N. J. Claims use since Sept. 24, 1942.

GRIFFIN—This in reverse letters on inverted triangle design above a smaller triangle design and within two lined quadrangular designed all of which makes a vertical rectangle for fabric shoe cleaner. Filed June 19, 1943 by Griffin Manufacturing Co., Brooklyn. Claims use since May 4, 1932.

No. 800—This in bold upper and lower case letters for general cleanser. Filed Aug. 18, 1943 by Solvay Process Co., New York. Claims use since July 28, 1942.

O-CEDAR CONE—This in outline and bold, upper and lower case letters for insecticides. Filed Mar. 4, 1940 by O-Cedar Corp., Chicago. Claims use since Feb. 2, 1940.

DR. SALSBURY'S PAR-O-SAN—This in medium and extra bold upper case letters for agricultural disinfectant and insecticide. Filed Oct. 8, 1941 by Dr. Salsbury's Laboratories, Charles City, Iowa. Claims use since Sept. 5, 1941.

STAUFFER—This in bold gothic upper and lower case letters for insecticides and fungicides. Filed May 24, 1943. Claims use since 1884.

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Trade Marks Granted

403,410. Toilet soap. Filed by Pinaud, Inc., New York, May 6, 1943. Serial No. 460,451. Published July 13, 1943. Class 6.

403,414. Disinfectants, germicides and fungicides. Filed by Fuld Bros., Baltimore, Md., May 10, 1943. Published July 13, 1943. Class 6.

403,416. Soap chips and scouring soap. Filed by Reid, Murdoch & Co., Chicago, May 10, 1943. Serial No.

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RHODIONES

to maintain consistent odor quality

Current shortages compel many changes in formulas. Yet, thanks to Du Pont chemists, you needn't gamble with any change of odor in your soap and perfume compounds. The important Rhodione group is typical of the way our Aromatics laboratory guards against any variation in performance or purity. Du Pont Rhodiones remain consistently uniform because they are chemically controlled at every stage of production.

One or more of the Rhodiones listed here can help solve some of your problems. Whether you employ them for soap, perfume, creams or powders, the Violet fragrance will remain characteristically sweet and true. E. I. du Pont de Nemours & Co. (Inc.), Organic Chemicals Dept., Aromatics Section, 40 Worth Street, New York 13, N.Y.

METHYL RHODIONE SUPRA. Newest contribution of Du Pont to Rhodione family—finest, smoothest, sweetest quality and of particular interest to makers of fine perfumes.

METHYL RHODIONE EXTRA. Has the characteristic Violet odor with a sweet, woody note. Adaptable for Violet and all bouquet compositions.

METHYL RHODIONE #1. Has an intense Violet odor with excellent lasting power. Especially suitable for use in soap compounds.

RHODIONE AB. Sweet and fragrant, with a high Alpha content. Widely used as a Violet base and modifier for floral and bouquet compositions.

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Du Pont Aromatics

DU PONT BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

460,537. Published July 13, 1943. Class 4.

403,459. Synthetic detergents for wet processing textile goods. Filed by Arkansas Co., Inc., Newark, N. J., July 4, 1942. Serial No. 454,049. Published Mar. 30, 1943. Class 4.

403,523. Automobile polish and cleaner. Filed by Clayton H. Trotti, Greenwood, So. Car., Apr. 27, 1943. Serial No. 460,223. Published July 13, 1943. Class 16.

403,612. Spot remover. Filed by Wallerstein Co., Inc., New York, N. Y., Apr. 20, 1943. Serial No. 460,040. Published July 27, 1943. Class 4.

403,617. Grease, oil, etc. cleaner and remover. Filed by Nitroloid Co., Berlin, Wis., May 1, 1943. Serial No. 460,357. Published July 27, 1943. Class 4.

403,634. Toilet soap. Filed by the J. B. Williams Co., Glastonbury, Conn., May 25, 1943. Serial No. 460,915. Published July 27, 1943. Class 4.

403,686. Aluminum cleaning preparation. Filed by Alumglow Cleansing Co., Long Island City, N. Y., Feb. 26, 1943. Serial No. 458,788. Published Aug. 3, 1943. Class 4.

403,691. Synthetic detergents and scouring agents. Filed by General Dyestuff Corp., New York, N.Y., Mar. 27, 1943. Serial No. 459,867. Published August 3, 1943. Class 4.

403,752. Fire scale and soot eradicator powder. Filed by G. N. Coughlan, Orange, N. J., Dec. 19, 1942. Serial No. 457,522. Published August 3, 1943. Class 6.

403,753. Belt dressing. Filed by F. Raniville Co., Grand Rapids, Mich., Dec. 26, 1942. Serial No. 457,614. Published August 10, 1943. Class 4.

403,757. Household cleaning preparations. Filed by Kitchen Art Foods, Inc., Chicago, Ill., Feb. 3, 1943. Serial No. 458,315. Published August 10, 1943. Class 4.

403,762. Rat and roach poison in paste form. Filed by Schutte Laboratories, Beaver Falls, Pa., Feb. 25, 1943. Serial No. 458,762. Published July 20, 1943. Class 6.

403,771. Food lotion. Filed by Pal-So-Dene Products Laboratories, Portland, Ore., March 25, 1943. Serial No. 459,348. Published August 3, 1943. Class 6.

403,792. Hand and skin lotions. Filed by Wendel Kirsch, New York, April 19, 1943. Serial No. 460,001. Published July 20, 1943. Class 6.

403,799. Tall oil. Filed by Union Bag & Paper Corp., New York, April 20, 1943. Serial No. 460,038. Published August 3, 1943. Class 6.

403,813. Scouring soap in cake and powdered form. Filed by The Bon Ami Co., New York, May 5, 1943. Serial No. 460,414. Published August 10, 1943. Class 4.

403,850. Protective hand and skin coating. Filed by Jones Medical Laboratories, Inc., Cleveland, O., May 24, 1943. Serial No. 460,873. Published July 27, 1943. Class 6.

403,851. Hand cream. Filed by Magnaflux Corp., Chicago, Ill., May 24, 1943. Serial No. 460,875. Published July 27, 1943. Class 6.

403,857. Insecticide and fungicide. Filed by Refined Products Corp., Lyndhurst, N. J., May 25, 1943. Serial No. 460,907. Published July 27, 1943. Class 6.

403,867. Men's soaps: toilet shaving and shaving cream. Filed by Parfums Charbert, Inc., New York, May 28, 1943. Serial No. 461,004. Published August 10, 1943. Class 4.

403,886. Toilet soap. Filed by Pinaud, Inc., New York, June 10, 1943. Serial No. 461,285. Published August 10, 1943. Class 4.

403,890. Saving creams. Filed by the Marlin Firearms Co., New Haven, Conn., June 14, 1943. Serial No. 461,379. Published August 10, 1943. Class 4.

Diamond Absorbs Distributors

Diamond Alkali Sales Corp. on October 1 took over and assimilated into the parent organization five heavy chemical firms who had formerly acted as distributors for Diamond alkalis. Consumers Chemical Co., 12 S. 12th St., Philadelphia, is now a part of the Diamond organization, with C. F. Wolters, Jr. as district manager. Other firms taken over include: Tri-State Chemical Co., 668 S. Main St., Memphis, E. A. Jones, manager; Sunshine Soda Co., Penton Bldg., Cleveland; Central West Chemical Co., Redick Tower Bldg., Omaha, V. M. Jacobsen, manager; and Buckeye Soda Products Co., 38 Main St., Cincinnati, L. W. Wahl, manager.

Recapture Italian Pumice Mines

Allied military action in Italy has recently resulted in the recovery of one of the world's most important pumice deposits on the Island of Lipari. James H. Rhodes & Co. of Chicago and Long Island City were before the war large importers of pumice from the Lipari mines. They anticipate now that these supplies may once more be available. Since the unavailability of Italian product over recent years, however, American soap makers have found improved grades of domestically produced pumice to be equally serviceable for their purpose.

Sterling Prods. Head to WPB

W. C. Teare, president of Sterling Products Co., left Chicago for Washington, D. C., Oct. 15 to take up a dollar-a-year job as chief of the industrial supply section of the War Production Board. Last year Mr. Teare organized Industrial Tool Stores, as a division of Sterling Products, to help get idle stocks of tools into the critical tool market. In Washington his job will be to see that necessary tools and supplies get into the distribution channels leading to the nation's war production lines.

Packaging Meeting Nov. 4-5

The annual meeting of the Packaging Institute will be held at the Hotel New Yorker, New York City, Nov. 4 and 5. Current packaging problems covering all phases of the industry will be discussed and reviewed.

R. Peltz Co. Moves

R. Peltz Co., Philadelphia, sales representatives for refiners and importers of oils, drugs and chemicals, have recently occupied new quarters in the Drexel Bldg., Philadelphia.

YES--WE STILL HAVE SOAP

WARTIME restrictions on oils have, from time to time, necessitated changing from one kind of oil to another. This has naturally resulted in some differences in the appearance and action of our soaps. Some of these changes, however, have turned out to be for the better—THESE NEW SOAPS ARE MILDER IN ACTION AND WILL NOT IRRITATE THE SKIN (an objectionable feature with some of the pre-war high-cocoanut-oil-content soaps).

All "HAAG SOAPS" are made with the same care now as in prewar days — completely saponified — laboratory controlled under the supervision of experienced, graduate chemists — filtered while refrigerated.

Write for wholesale price list.

Samples furnished upon request.

LIQUID TOILET SOAPS

LIQUID FLOOR CLEANSERS

VEGETABLE OIL JELLY SOAPS

SURGICAL SOAPS

DISINFECTANTS

POLISHING CLOTHS FOR SERVICEMEN

LIQUID METAL POLISH

SPECIALTY PRODUCTS

HAAG

LABORATORIES, INC.

6101 S. MAY ST., CHICAGO, ILL.

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BENTONITE

is ready for immediate shipment

Schundler Bentonite, the clay of a variety of uses, is ready for immediate shipment. It is plentiful. Prompt shipments are being made without "red tape."

AN IDEAL "SUBSTITUTE"

As a "substitute" or alternate for other materials—which may be scarce now—Schundler Bentonite is an ideal material used either alone or in combination. Investigate its application to your problem today.

NUMEROUS USES

A few typical uses of Schundler Bentonite are: Purification of water supplies . . . Insulation blocks, plasters and cements . . . In Ceramic bodies to improve the green strength of lean clays and the quality of fired products . . . In Rubber latex adhesives . . . Emulsions and aqueous suspensions of bitumens . . . Compounds for machining and drawing metals . . . Polishes and cleaners . . . Adhesives and sizings in combination with starches . . . Pharmaceuticals and cosmetics . . . Paper manufacture to inhibit gumming of screens . . . Fluxing compounds for arc welding . . . Coating walls of asphalt containers.

TECHNICAL SERVICE

Schundler Bentonite is sold with technical service . . . a service backed by a large scientific staff working in a well equipped Bentonite laboratory. Your inquiries are invited.

F. E. SCHUNDLER & CO., INC.

528 RAILROAD ST.
JOLIET, ILLINOIS

Schundler

RAW MATERIAL MARKETS

As of October 28, 1943

THE latest in a series of developments affecting the oils and fats situation was the issuance, October 25, by the War Food Administration of Food Distribution Order No. 87 that limits fatty acid inventories, effective November 1, to a 60 days' supply. Issuance of FDO-87 comes as the most recent link in the chain of events leading up to what appears to be a desire to increase soap production. It follows close on the heels of: 1.) FDO-42, which raised the percentage of fats and oils that can be used in the making of various types of soaps; 2.) FDO-86—the "fat-stretching order" requiring the use of rosin or other builders by various percentages for different classes of soap as a complementary order of FDO-42; 3.) exemption from new restrictions on container use and 4.) "official" prediction of the use of edible lard to the extent of four hundred million pounds a year—now reported being consumed at the rate of one hundred million pounds a year in the manufacture of soap.

What FDO-87 Provides

Fatty acid inventories (excluding fatty acids produced by the user) will be limited to a 60 days' supply, in order, states the announcement, "to provide better distribution of available supplies." The limitation will be based on the quantity of fatty acids used during the six months period beginning January 1, 1943, and non-producing users may figure their 60 days' inventory as one-third of the aggregate consumed in that half-year period. If a user's present inventory exceeds the allowable quantity of fatty acids, he need not sell or otherwise dispose of his surplus but will not be permitted to accept further deliveries until his stocks fall below the prescribed limits. Delivery of 500 pounds or less of fatty acids may be accepted during any one month by a consumer if his inventory during that month does not exceed 3,000 pounds. However, if he accepts more than 50 pounds a month, he is required to give the producer a written statement to the effect that his purchase is within the terms of the order. A consumer may accept delivery of his usual maximum purchase unit of fatty acids if, at the time of acceptance, his inventory does not exceed one-sixth of the aggregate amount purchased and used by him during the base period—the first six months of 1943. Present users who did not use fatty acids during the base period may apply for adjustment of their inventory quotas to the Director of Food Distribution, War Food Administration, Washington, D. C.

Applications of the Order

The order does not apply to crude and refined tall oil, raw and acidulated foots from the refining of animal, vegetable, fish or marine animal fats and oils. It does apply to all other fatty acids produced from these oils, and purchased by the users, whether distilled or undistilled. These include such fatty acids as those produced from cottonseed, peanut, soybean, corn, linseed, palm, castor, dehydrated castor, coconut, fish, animal and hydrogenated vegetable and fish oils, and also include acids such as capric, lauric, myristic, palmitic, stearic and oleic (red oil).

Stocks at All-Time Low

In issuing the order, the War Food Administration said that the stocks of fatty acids are near an all-time-low—due principally to a lack of processing equipment—and limitations on the use of unsplit glycerides have contributed to an increase demand for these acids in soaps and lubricants.

In evaluating the effect of this new order, it is well to remember that heretofore small soapers, usually without facilities for removing the required percentages of glycerine from the oils and fats they needed for the manufacture of their soaps, have reported they were unable to obtain fatty acids. Price conditions, demands for more fatty acids for bigger producers and in other fields, all contributed to making things rather unpleasant for the small soaper. And while the reported total absence of spot stocks of fatty acids seems to preclude the possibility of immediate relief, at least, it is felt the new order is a step in the right direction. FDO-87, plus the four other factors mentioned earlier in this piece, lend added credence to the idea that increased soap production is desired and will be fulfilled.

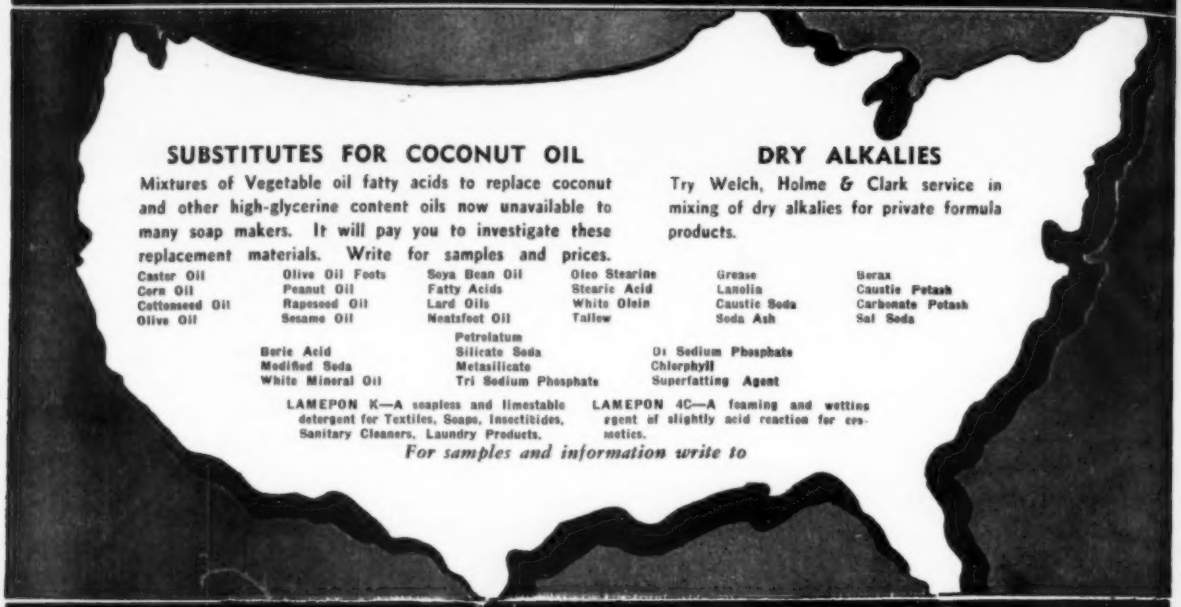
Caustic Soda Still Short

Although efforts have been made—ostensibly in the form of export restrictions—to curb the continuing shortage, reported in recent weeks, of caustic soda, it is still too early to judge their effect on the immediate caustic soda position.

Perfuming Materials Quiet

The market for essential oils and aromatic chemicals was characterized as quiet during the past month as far as price changes and supply situation are concerned. The establishment of price ceilings on peppermint and spearmint oils reported last month was followed by an industry advisory meeting in Washington, the complete story of which appears elsewhere in the issue, marking the only important activity in this field.

RAW MATERIALS FOR THE SOAP INDUSTRY



SUBSTITUTES FOR COCONUT OIL

Mixtures of Vegetable oil fatty acids to replace coconut and other high-glycerine content oils now unavailable to many soap makers. It will pay you to investigate these replacement materials. Write for samples and prices.

Castor Oil
Corn Oil
Cottonseed Oil
Olive Oil
Olive Oil Foots
Peanut Oil
Rapeseed Oil
Sesame Oil
Soya Bean Oil
Fatty Acids
Lard Oils
Neatsfoot Oil
Oleo Stearine
Stearic Acid
White Olein
Tallow
Grease
Lanolin
Caustic Soda
Soda Ash
Borax
Caustic Potash
Carbonate Potash
Sal Soda
Petrolatum
Boric Acid
Modified Soda
White Mineral Oil
Silicate Soda
Metasilicate
Tri Sodium Phosphate
Di Sodium Phosphate
Chlorphyll
Superfatting Agent

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Try Welch, Holme & Clark service in mixing of dry alkalies for private formula products.

LAMEPON K—A soapless and limestable detergent for Textiles, Soaps, Insecticides, Sanitary Cleaners, Laundry Products.

LAMEPON 4C—A foaming and wetting agent of slightly acid reaction for cosmetics.

For samples and information write to

WELCH, HOLME & CLARK CO., Inc.
563 GREENWICH STREET ESTABLISHED 1838 NEW YORK CITY

RICINOLEIC ACID
(Castor Oil Fatty Acid)

Now temporarily available in large or small quantities for civilian as well as military uses.

WOBURN
DEGREASING CO. OF N. J. Harrison, N. J.

RAW MATERIAL PRICES

(As of October 27, 1943)

Minimum Prices are for car lots and large quantities. Price range represents variation in quotations from different suppliers and for varying quantities.

Chemicals

Acetone, C. P., drums	lb.	$ .08½	$ .09
Acid, Boric, bbls., 99½%	ton	109.00	126.00
Cresylic, drums	gal.	.81	.83
Low boiling grade	gal.	.81	.83
Muriatic, C. P., carboys	lb.	.06½	—
Oxalic, bbls.	lb.	.11¼	.12½
Alcohol, Ethyl, drums	gal.	11.94½	11.98
Complete Denat., SDI, dms., ex.	gal.	.62	.64
Alum. Potash lump, bbls.	lb.	.04½	—
Ammonia Water, 26°, drums	lb.	.02¼	.02½
Ammonium Carbonate, tech., drums	lb.	.08½	.09¼
Bentonite	ton	11.00	16.00
Bleaching Powder, drums	100 lb.	2.50	3.60
Borax, pd., bbls., bags	ton	45.00	71.00
Carbon Tetrachloride, car lots	gal.	.60	1.17
L. C. L.	gal.	.80	1.27
Cresol, U.S.P., drums	lb.	.10¾	.11¾
Cresote Oil	gal.	.15½	—
Feldspar, works	ton	14.00	20.50
Formaldehyde, bbls.	lb.	.05½	.06¼
Fullers Earth	ton	8.50	15.00
Glycerine, C.P., drums	lb.	.18¾	.19¼
Dynamite, drums	lb.	.18¼	.18¾
Saponification, drums	lb.	.12¾	.14¾
Soap lye, drums	lb.	.11½	—
Lanolin, U.S.P., hydrous, drums	lb.	.32½	.34
Anhydrous, drums	lb.	.34	.35½
Lime, live, bbls.	ton	6.25	14.50
Mercury Bichloride, drums	lb.	2.34	2.39
Naphthalene, ref. flakes, bbls.	lb.	.08	.08¼
Orthodichlorbenzene	lb.	.07	.08
Paradichlorbenzene, drums	lb.	.11	.15
Petrolatum, bbls. (as to color)	lb.	.021	.08
Phenol (Carbolic Acid) drums	lb.	.10	.10¾
Pine Oil, drums	gal.	.55	—
Potash, Caustic,solid	lb.	.06¼	.06¾
Flake, 88-92%	lb.	.07	.07½
Liquid, 45% basis	lb.	.03⅛	.03½
Potassium Carbonate, solid	lb.	.06½	.06¾
Liquid	lb.	.05½	.05¾
Pumice Stone, coarse	lb.	.03⅝	.04¼
Rosins (net wt., ex dock, New York)—			
Grade D to H	100 lb.	4.12	4.67
Grade I to N	100 lb.	4.68	4.93
Grade WG to X	100 lb.	5.57	6.05
Rotten Stone, dom., bags	lb.	.0128	.019
Silica	ton	17.00	38.00
Soaps—			
Tallow Chip, 88%	lb.	.11	.11⅝
Powder, 92%	lb.	.11⅜	.12
Powdered, White Neutral	lb.	.25½	.42
Olive Oil Paste	lb.	.40	—
Shampoo Base	lb.	.18	.20
Liquid Concentrate, 30-32%	gal.	.75	.79
Soda Ash, cont., wks., bags, bbls.	100 lb.	1.15	3.25
Car lots, in bulk	100 lb.	.95	—
Soda Caustic, cont., wks. solid	100 lb.	2.30	3.15
Flake	100 lb.	2.70	—
Liquid, tanks, 47-49%	100 lb.	1.92½	1.95
Soda Sal., bbls.	100 lb.	1.20	1.40
Sodium Chloride (Salt)	ton	14.20	18.00
Sodium Fluoride, bbls.	lb.	.07	.08
Sodium Bisulfate	100 lb.	2.20	2.40
Sodium Metasilicate, anhyd.	100 lb.	4.00	5.30
Granulated	100 lb.	2.50	3.55
Sodium Pyrophosphate	100 lb.	5.28	6.60
Sodium Silicate, 40 deg., drum	100 lb.	.80	1.20
Drums, 52 deg. wks.	100 lb.	1.40	1.80
Tar Acid Oils, 15-25%	gal.	.27½	.33½
Triethanolamine	lb.	.19	.20
Trisodium Phosphate, bags, bbls.	100 lb.	3.40	4.15

Oils — Fats — Greases

Babassu, tanks, futures	lb.	.1110	Nom.
Castor, No. 1, bbls.	lb.	.1300	.1455
No. 3, bbls.	lb.	.1375	.1425
Coconut (without excise tax)			
Manila, tanks, N. Y.	lb.	.0835	—
Tanks, Pacific Coast, futures	lb.	No Prices	
Copra, bulk, coast	lb.	No Prices	
Corn, tanks, West	lb.	.12¾	—
Cottonseed, crude, tanks, mill	lb.	.12¾	—
PSY, futures	lb.	.13⅞	.14⅛
Fatty Acids—			
Corn Oil, tanks, Chicago	lb.	.14	.14½
Coconut Oil, tanks, Twitchell, Chi.	lb.	.18	.18½
Cotton Oil, tanks, Chicago	lb.	.13½	—
Settled soap stock, Chicago	lb.	.03⅞	.04
Boiled soap stock, 65%, Chi.	lb.	.04⅞	.05
Foots, 50%, Chicago	lb.	.03½	.03¾
Castor Oil, split, tanks, N. Y.	lb.	.20¾	.21¼
Linseed Oil, split, tanks, N. Y.	lb.	.1530	—
Distilled	lb.	.21½	.22
Myristic acid, distilled, tanks, N.Y.	lb.	.19	.19½
Palm Oil, white tanks, N. Y.	lb.	No Prices	
Single distilled	lb.	No Prices	
Soybean Oil, split, tanks, N. Y.	lb.	.1175	—
Distilled	lb.	.1390	.1400
Red Oils, bbls., dist. or sapon	lb.	.1325	.1425
Tanks	lb.	.12½	—
Stearic Acid, saponif.			
Double pressed	lb.	.15⅞	.16⅞
Triple pressed	lb.	.18⅝	.19⅝
Greases, choice white, tanks	lb.	.08⅞	—
Yellow	lb.	.08¼	—
Lard, city, tubs	lb.	.1400	—
Linseed, raw, bbl.	lb.	.1530	—
Tanks, raw	lb.	.1490	—
Olive, denatured, bbls., N. Y.	gal.	4.10	4.20
Foots, bbls., N. Y.	lb.	No Prices	
Palm, Sumatra, cif. New York, tanks	lb.	No Prices	
African, tanks, ex. ship	lb.	.08¼	Nom.
Palm, kernel	lb.	No Prices	
Peanut, crude, tanks, mill	lb.	.13	Nom.
Soya Bean, domestic, tanks, crude	lb.	.11¾	Nom.
Stearin, oleo, bbls.	lb.	.1061	—
Tallow, special, f.o.b. N. Y.	lb.	.08½	—
City, ex. loose, f.o.b. N. Y.	lb.	.08⅝	—
Teaseed Oil, crude	lb.	.29	Nom.

ACKNOWLEDGED HIGHEST QUALITIES

STEARIC ACID

(DISTILLED)

CAKE, FLAKE AND POWDERED
TECHNICAL AND U.S.P. GRADES

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OLEIC ACID

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We Recover All Glycerine for War Purposes

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A PUMICE TO MEET EVERY NEED

Not until Valencia — the standard of American Pumice — was discovered at Grants, New Mexico, was it thought that a domestic pumice could match the quality of imported Italian Pumice. This inexhaustible deposit at Grants is true pumice stone and not a volcanic ash. It is physically and chemically equal in every respect to the now unobtainable Italian Pumice. • The Valencia plant's output of grades for every need is rigidly under control for particle size, purity, weight and color.

Check this table comparing Valencia with the highest grade of imported Italian Pumice. See for yourself that Valencia is truly the standard of American Pumice.

	American Pulverized Per Cent	Italian Select Per Cent
Silica	72.90	73.24
Alumina	11.28	10.61
Iron Oxide	.86	1.57
Titanium Oxide	.06	.10
Calcium Oxide	.80	1.10
Magnesium Oxide	.36	.40
Soda	3.64	3.03
Potash	4.38	5.58
Sulphuric Anhydride	.03	.05
Loss on ignition	5.20	4.04

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Warehouses: Detroit, Michigan and South Kearny, N. J.

(As of October 27, 1943)

Essential Oils

Almond, Bitter, Artificial	lb.	$ .85	$ .98
Bitter, F.F.P.A.	lb.	5.25	5.50
Sweet, cans	lb.	1.85	1.93
Anise, cans, U.S.P.	lb.	3.50	3.85
Bay, 55-60% phenols, cans	lb.	1.60	1.90
Bergamot, coppers, S.A.	lb.	8.25	—
Artificial	lb.	2.25	4.50
Birch Tar, rect., cans	lb.	3.00	3.25
Crude, cans	lb.	2.00	2.25
Bois de Rose, Brazilian	lb.	4.75	5.00
Cayenne	lb.	—	—
Cade (juniper tar), drums	lb.	1.35	1.50
Cajeput, tech., drums	lb.	1.75	2.10
Calamus, cans	lb.	—	—
Camphor, Sassy, drums	lb.	.60	.65
White, drums	lb.	8.50	—
Cananga, native, cans	lb.	8.10	8.50
Rectified, cans	lb.	8.90	11.00
Cassia, Redistilled, U.S.P.	lb.	10.50	12.50
Cedar Leaf, cans	lb.	1.10	1.45
Cedar Wood, light, drums	lb.	.55	.60
Citronella, Java, drums	lb.	2.50	2.80
Citronella, Ceylon, drums	lb.	.90	1.05
Clove, U.S.P., cans	lb.	1.65	1.73
Eucalyptus, Austl., U.S.P., cans	lb.	1.20	1.25
Fennel, sweet, cans	lb.	2.70	3.00
Geranium, African, cans	lb.	13.00	16.00
Bourbon, cans	lb.	13.00	15.00
Turkish (Palmarosa)	lb.	4.10	6.00
Hemlock, cans	lb.	1.10	1.35
Lavender, 30-32% ester, cans	lb.	9.00	9.25
Spike, Spanish, cans	lb.	3.60	4.75
Lemon, Ital., U.S.P.	lb.	—	Nom.
Cal.	lb.	3.25	—
Lemongrass, native, cans	lb.	.95	1.30
Linaloe, Mex., cases	lb.	2.90	—
Nutmeg, U.S.P., cans	lb.	5.25	6.00
Orange, Sweet, W. Ind., cans	lb.	4.00	5.00
Italian cop	lb.	—	—
Distilled	lb.	.75	.78
California, expressed	lb.	1.00	1.50
Origanum, cans, tech.	lb.	2.85	3.25
Patchouli	lb.	6.60	8.50
Pennyroyal, dom.	lb.	—	—
Imported	lb.	3.00	3.25
Peppermint, nat., cans	lb.	6.00	—
Redis., U.S.P., cans	lb.	6.35	—
Petitgrain, S. A., cans	lb.	1.50	1.85
Pine Needle, Siberian	lb.	3.00	3.25
Rosemary, Spanish, cans	lb.	2.00	2.20
drums	lb.	1.50	1.65
Sandalwood, dom., dist., U.S.P.	lb.	6.25	—
Sassafras, U.S.P.	lb.	1.90	2.35
Artificial, drums	lb.	1.25	1.40
Spearmint, U.S.P.	lb.	4.00	—
Thyme, red, N.F.	lb.	2.50	3.25
White, N.F.	lb.	2.65	4.00
Vetiver, Java	lb.	25.00	28.50
Ylang Ylang, Bourbon	lb.	—	—

Aromatic Chemicals

Acetophenone, C. P.	lb.	$ 1.55	$ 1.60
Amyl Cinnamic Aldehyde	lb.	—	—
Anethol	lb.	2.03	2.25
Benzaldehyde, tech.	lb.	.45	.55
N. F. VI	lb.	.85	.98
Benzyl, Acetate	lb.	.60	Nom.
Alcohol	lb.	.68	.75
Citral	lb.	3.20	5.00
Citronellal	lb.	2.75	3.25
Citronellol	lb.	6.00	7.00
Citronellyl Acetate	lb.	—	—
Coumarin	lb.	2.75	3.25
Diphenyl oxide	lb.	.63	—
Eucalyptol, U.S.P.	lb.	2.85	3.25
Eugenol, U.S.P.	lb.	2.50	3.05
Geraniol, Soap	lb.	2.50	3.00
Other grades	lb.	3.50	4.00
Geranyl Acetate	lb.	—	—
Heliotropin	lb.	3.35	3.50
Hydroxycitronellal	lb.	8.75	9.00
Indol, C. P.	lb.	26.00	27.50
Ionone	lb.	3.20	5.65
Isoborneol	lb.	.81	.90
Iso-boryl acetate	lb.	.89	1.00
Iso-Eugenol	lb.	3.90	—
Linolool	lb.	6.60	8.00
Linalyl Acetate	lb.	5.50	7.25
Menthol, natural	lb.	—	—
Synthetic, U.S.P.	lb.	13.00	19.00
Methyl Acetophenone	lb.	—	—
Anthranilate	lb.	2.20	2.50
Paracresol	lb.	—	—
Salicylate, U.S.P.	lb.	.40	.92
Musk Ambrette	lb.	12.50	14.00
Ketone	lb.	10.50	14.00
Xylol	lb.	1.40	2.90
Phenylacetaldehyde	lb.	2.60	3.00
Phenylacetic Acid	lb.	1.60	1.80
Phenylethyl Alcohol	lb.	2.38	2.75
Rhodinol	lb.	20.00	—
Safrol	lb.	1.80	2.00
Terpineol, C.P., dra.	lb.	.37	—
Cans	lb.	.42	—
Terpinyl Acetate, 25 lb. cans	lb.	.65	—
Thymol, U.S.P.	lb.	2.60	Nom.
Vanilin, U.S.P.	lb.	2.60	2.90
Yara Yara	lb.	1.83	2.00

Insecticide Materials

Insect Powder, bbls.	lb.	.29	.30
Pyrethrum Extract			
20 to 1	gal.	5.90	6.00
30 to 1	gal.	8.85	9.00
Derris, powder—4%	lb.	.31	—
Derris, powder—5%	lb.	.35	—
Cube, powder—4%	lb.	.31	—
Cube, powder—5%	lb.	.35	—
Squill, red, dried	lb.	.85	.88

Waxes

Bees, white	lb.	.57	.63
African, bgs.	lb.	.3750	—
Refined, yel.	lb.	.5250	.6050
Candelilla, bgs. (crude)	lb.	.38	—
Carnauba No. 1, yellow	lb.	.8325	.8925
No. 2, N. C.	lb.	.7575	.8175
No. 3, Chalky	lb.	.7125	.7725
Ceresin, yellow	lb.	.13½	.18
Montan Wax, bags	lb.	.45	.46
Paraffin, ref., 125-130	lb.	.0520	.0560

Removes color, odor, taste

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PRODUCTION SECTION

A section of SOAP devoted to the technology of oils, fats, and soaps published prior to Jan. 1, 1932, as a separate magazine under the title, Oil & Fat Industries

Glycerine Recovery from Lye

IT SHOULD be possible with a multi-change system to confine the loss of glycerine in soap to 5 per cent of that present in the original fat charge. At the same time unnecessary dilution must be avoided to keep down evaporation costs.

Saponification lyes should contain not less than 0.66 per cent of free caustic soda in order to ensure a high degree of saponification of the fat charge at this stage. Such lyes can obviously be used still further for saponification purposes if there are any high free-fatty-acid stocks entering the process.

Normally, any rosin used is added and saponified before the strong change, but if it forms a considerable proportion of the fats the water-soluble rosin acids can be a serious source of impurity in the finished glycerine. In such cases the rosin may be saponified and washed separately so that the lyes from it do not mix with the glycerine lyes.

Soap Lye Treatment

The first step is to reduce the quantity of soap in solution by cooling the lyes and skimming off the precipitated soap. The next step is the removal of dissolved soaps, fatty acids and mucilaginous matter. Two alternative methods are in common use, ferric chloride with hydrochloric acid, or aluminum sulfate with sulfuric acid. The first method has the advantage that no sodium sulfate is produced when the acid is later neutralized. Sodium sulfate is undesirable because it does not have such a strong graining action on soaps as sodium chloride. The corrosive action of ferric chloride on metals is a disadvantage. The aluminum sulfate treatment is more expensive than the other, and it requires special care of recovered salt to ensure that the sulfate to chloride ratio be kept within bounds. Many soapers consider that these objections are more than offset by the improvement in the quality of the treated lye.

The general principle is to split the soaps with mineral acid and remove the water-soluble fatty acids as insoluble iron or aluminum soaps. A second stage is to precipitate the excess metal hydroxide by addition of alkali to cause sorption of albuminous material. At this stage the liquor should be heated, but not above 70° C. It is good practice to add activated carbon. This is available from the distillation process in a "spent" condition, but still capable of adsorbing impurities from soap lyes. The lye is filtered after each stage.

The efficiency of the first treatment depends on complete precipitation of fatty acids and metallic soaps in a physical condition for good filtration. This is accomplished by controlling the acidity of the liquor, preferably by means of a pH meter. While soap is still present it will exert a buffer action and so prevent any rapid change in pH during the addition of the acid and the metallic salt. When all the soap has been split there will be a sudden drop in pH, usually to the region of pH 3. At this point the maximum precipitation of fatty acid soaps has taken place.

Mucilage and albuminous matter are removed by sorption on a floc of aluminum or ferric hydroxides. The optimum pH range for the coagulation of these metallic hydroxides is around neutrality or at about pH 7. The amount of metallic salt necessary will vary according to the quality and nature of the oils and fats from which the lye comes. It is seldom outside the limits of 0.1-0.3 per cent for aluminum sulfate or 0.075-0.25 per cent for ferric chloride. Insufficient addition of the precipitant is likely to give trouble later in the refining of the glycerine.

In order to keep the loss of glycerine during processing at a minimum, the press cakes from the lye treatment should be water washed and the wash waters returned to the treatment tanks, until the glycerine removed is worth less than the cost of evaporating the accompanying water. (In the United States, under wartime restrictions, cost is currently of less significance than maximum percentage of recovery. The Editor.)

The treatment known as Garrigue's process is said to give more complete removal of water-soluble fatty acids and their sodium salts. In this process the lye is given a single treatment with aluminum sulfate and sulfuric acid, and evaporated to 40 per cent glycerine. This semi-crude is filtered free from salt, acidified if necessary, and 0.5 per cent of barium chloride added to precipitate the barium salts of the water-soluble fatty acids. It is possible that this method may increase evaporation costs.

Among the new methods of treating soap lyes, the most common suggestion is to extract the organic impurities with a medium in which glycerine is insoluble. Fatty acids and hydrogenated oils have been advocated for this purpose. By this treatment the fatty-acid impurities would be recovered instead of being lost in the press cake.

A recent claim of interest is that the sludge obtained in recovering the nickel catalyst from hydrogenated fats is superior to aluminum sulfate for the treatment of spent soap lyes. The disposition of this spent nickel catalyst is usually something of a problem for hydrogenation plants. Use in glycerine recovery might provide a convenient outlet for the sludge. J. L. Boyle. *Manufacturing Chemist* 14, 275-7 (1943).

Active Oxygen Method

An all-glass aeration tube and improved air-distributing apparatus are described for use in the active oxygen method, also called the Swift stability test for determining the stability of fats. A procedure is described in which only one tube is required for each test sample. It is thus possible to carry out as many stability tests simultaneously on one standard apparatus as on three such units by the usual three-tube method.

Observations on the use of adaptations of Wheeler's method of determining peroxide values are reported. The effects of air, time of reaction, size of sample, and quantities of reagents were investigated. R. W. Riemenschneider, J. Turer, and R. M. Speck. *Oil & Soap* 20, 169-71 (1943).

Practical Tallow Splitting

Inedible beef tallow may be split to yield commercial stearic acid, red oil, and glycerine. As practiced at the plant of the W. C. Hardesty Co. in Dover, Ohio, the beef tallow is freed of albuminous impurities by coagulation with 60° Be. sulfuric acid, accompanied by heating with a jet of steam. The tallow is split by the Twitchell process.

In applying this process, in each saponifier is put a tank car of tallow, 40 per cent as much water, 1-1.5 per cent of sulfuric acid, and 0.7-1.5 per cent of Twitchell reagent. A 12-hour boil brings the system into equilibrium, with the tallow about 89 per cent converted to fatty acids and glycerine. The underlying sweet water is then sent to the glycerine department where it is limed to neutralize the sulfuric acid, treated with aluminum sulfate to coagulate any residual albumen and put through two vacuum evaporators. The final product, after removal of precipiated calcium sulfate, is 88 per cent saponification glycerine.

Meantime fresh water and sulfuric acid are supplied to the saponifier, when a second boil carries hydrolysis to within a few per cent of theoretical. The resulting fatty acids are vacuum steam-distilled in a continuous bubble tower. Bottoms from the still are stearine pitch.

The distilled fatty acids are pumped into pans and allowed to crystallize slowly to form 14-pound cakes. After being chilled to about 40° F. the cakes are wrapped in burlap and pressed in hydraulic presses. The liquid acids squeezed out—principally oleic—constitute red oil.

Solid stock from the cold presses is panned again and pressed in steam-heated presses. Length of the steam application depends on the grade of material desired. The press cake remaining is commercial stearic acid, which actually is a blend, containing stearic and palmitic acids in about equal proportions, with a trace of myristic acid, and from 2 to 12 per cent of oleic acid. In making the better grades of stearic acid, the soft edges of the press cake are trimmed off by hand. Trimmings are recycled to the hot presses, liquid foots to the cold presses.

As a final step, both red oil and stearic acid are acid-washed and treated with decolorizing clays and carbon blacks. After filtration, red oil is put into drums or sold by tank car. Stearic acid is sprayed into beads, pulverized into powder, or molded into cakes. *Chem. & Met. Engineering* 50, No. 9, 132-5 (1943).

Crystalline Forms of Soap

In addition to liquid, liquid crystalline and waxy phases, there are at least four known crystalline forms of soap. These crystalline forms in various proportions and conditions, make up most commercial solid soap products. The four forms, are the alpha, beta, delta and omega. The latter three are of most industrial importance. They possess certain phase fields of stability in the usual soap-water systems, and X-ray evidence indicates that they are of the nature of solid solutions, since they appear to be crystalline phases of variable moisture and soap content. The effect of moisture and fat composition on X-ray spacings is such that it may be concluded that no definite hydrates exist in the usual commercial soaps, and no apparent fractionation of the soaps is evident. R. H. Ferguson, Procter & Gamble Co., before American Oil Chemists Society, Chicago, Oct. 6-7-8.

Alkyl Aryl Sulfonates

Mixed alkyl aryl sulfonates are prepared in which the alkyl groups are derived from a petroleum distillate boiling mostly above 100° C. The method involves sulfonation of corresponding mixed alkyl aryl compounds with treatment of these compounds, prior to the sulfonation, with a phosphorus acid, oxide or chloride. As a result, dry mixed alkyl aryl sulfonates are obtained which can be stored for a longer time without developing unpleasant odors than a mixture otherwise similarly prepared but without the use of the phosphorus compound. Gilbert C. Toone, to Allied Chemical & Dye Corp. U. S. Patent No. 2,314,255.

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U.S.I. CHEMICAL NEWS

November ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1943

Sodium Ethoxide Uses Widen in Making War-Essential Drugs

Key Reactions Depend upon Product made Available by U.S.I.

Production of atebrin, the vitally-needed substitute for quinine, as well as of vitamin B_1 and sulfadiazine have tremendously increased the importance of Claisen Condensation reactions. As a result, demand for sodium ethoxide to serve as the condensing agent has multiplied rapidly.

In the preparation of atebrin, sodium ethoxide is used to condense the diethyl amino ethyl chloride with ethyl acetoacetate to form the side chain. In the synthesis of vitamin B_1, sodium ethoxide is required for the condensations of two intermediates: aceto butyrolactone and sodium formyl beta ethoxy ethyl propionate. For sulfadiazine, sodium ethoxide is used with ethyl acetate and ethyl formate to give ethyl sodium formyl acetate.

The Claisen Condensation type of reaction, using sodium ethoxide, can best be illustrated by the preparation of ethyl acetoacetate from ethyl acetate, in which the reaction is:

$$2\ CH_3COOC_2H_5 + C_2H_5ONa \longrightarrow CH_3C(ONa)\ CH\ COOC_2H_5 + C_2H_5OH$$

(Neutralization of the ethyl sodium acetoacetate gives ethyl acetoacetate.)

These uses for sodium ethoxide may well represent only the beginning. For with the ever-widening possibilities for commercial-scale production of complex organic synthetics, increasing use of Claisen Condensation reactions is bound to be made. Particularly will this be true when such products as ethyl sodium acetone oxalate, acetyl acetone, and aceto butyrolactone become available commercially.

Sodium ethoxide is now supplied by U.S.I. in an alcohol solution known as Anhydrous S.D. 2B, modified with sodium.

Recovers Alcohol, Acetone By Solvent Extraction

An economical new process is reported for recovering low-boiling alcohols, ketones, aldehydes, etc., particularly from aqueous solutions of less than 5% strength. The process has been shown, experimentally, to require less heat and to permit recovery of many liquids from solutions too dilute to be handled otherwise. It involves solvent extraction, followed by distillation of the extract layer to give the organic liquid overhead.

Revised Folder on U.S.I. Products

A new descriptive folder listing U.S.I. products and their more common uses is now available upon request.

Synthetic Rubber Takes Big Tonnage of 'Secondary' Chemicals

Many Important Applications of Chemicals Other than Butadiene and Styrene Described

The current Government program calls for the annual production of 850,000 long tons of synthetic rubbers: 735,000 tons of GR-S (Buna S); 75,000 tons of GR-I (Butyl); and 40,000 tons of GR-M (Neoprene). In addition, smaller amounts of Buna N, Chemigum, Hycar, Koroseal and Thiokol are being manufactured by private companies. Aside from the chief constituents — butadiene, styrene, isobutylene, isoprene, and chloroprene — many other chemicals are required, and although their proportions are small, the total amounts are great. In the processing of the synthetic rubbers, moreover, still other substances are needed; some of these are the same as those used in processing natural rubber, but in greater proportions; some are quite different. The total amounts of all these "secondary" chemicals reach staggering figures.

A synthetic "first" . . . with millions more to come

Inorganic and Organic

These additional chemicals are both inorganic and organic. Large amounts of alum and soda ash, for example, are required to soften the water used in the polymerization process; sodium metaphosphate is used for preventing corrosion in pumps, pipe lines and tanks; chlorine is employed to keep down slime formation in apparatus; anhydrous ammonia and brine are necessary to furnish refrigeration; tons of rock salt and much sulfuric acid are used in solution to precipitate or coagulate the synthetic latex.

Organic stabilizers, little known compounds which prevent the premature polymerization of the butadiene and styrene while in storage, are present in only about two hundredths of one per cent. Yet on the basis of 748,600 tons of butadiene, this small proportion means about 150 tons, or a third of a million pounds. Furthermore, these stabilizing agents must be removed before the material is emulsified, and for this a solution of sodium hydroxide is required.

(Continued on next page)

Chemistry at War Keynote of Chemical Show

Highlighting the chemical progress which has been crowded into two years of war, the 19th Exposition of Chemical Industries will concentrate on factual, "show-how" information. It promises a stimulating panorama of recent accomplishments in plant conversion, creation of new products, and high speed transition from test tube to tank car production. Madison Square Garden, New York, Dec. 6 to 11.

One of the new synthetic rubbers, as it emerges on conveyor from the dryer which removes water collected during coagulation.

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November ★ **U.S.I. CHEMICAL NEWS** ★ 1943

Synthetic Rubber Chemicals

(*Continued from preceding page*)

The emulsification of the butadiene and styrene requires great quantities of soap, pure sodium stearate. The plants are designed to use soap itself or to make the soap from stearic acid and sodium hydroxide. The polymerization catalyst is added to the emulsified materials, and later a reaction stopper or anti-polymerizing agent is used to arrest the polymerization at the proper stage. (This reaction stopper may be an antioxidant and therefore serve a dual purpose.)

Larger proportions of softeners are generally required in GR-S than in natural rubber. If at least five per cent of a softener is used in every GR-S compound, the total amount would be 36,750 tons or somewhat over 82,000,000 pounds! Softeners must be cheap and the important ones come from coal tar and turpentine products. High-boiling esters such, for example, as dibutyl phthalate, dibutyl sebacate, etc., are in favor in the processing of some of the synthetic rubber compounds.

Accelerators

Organic accelerators are important in the vulcanization of GR-S compounds, as with natural rubber. There are variations in the effects obtained, but mercaptobenzothiazole is the leader in both cases. Tetramethylthiuram-mono-sulfide and mercaptothiazoline are also useful. The aldehyde-amine type of accelerator, like the butyraldehyde condensation product with aniline, acts best as a secondary accelerator to "boost" the action of those just mentioned. From 1.0 to 1.5 parts are generally used to 100 of the synthetic rubber. On the basis of 735,000 tons of GR-S, one per cent means 7,350 tons of accelerators.

In the manufacture of Butyl rubber, boiling ethylene is used to refrigerate the reaction mixture. The manufacture of Buna-N requires sodium oleate as the emulsifier, salt for the coagulation, and antioxidants for stopping the polymerization. Furthermore, reclaimed rubber is closely connected with the entire program and the amount now being made is almost double the pre-war production. Here caustic soda and oils from the coal and pine tar industries are widely used.

"Research is the price of progress," and surely at this time, with the wonderful co-operation of rubber chemists and engineers in the great synthetic rubber program, we can expect marvelous advances in rubber technology, and the application of many new chemicals to make the synthetic rubber do even more than natural rubber could do.

Continuous Process Recovers Coating Materials from Water

DETROIT, Mich. — A method for recovering and reconditioning the excess sprayed coating material picked up by spray-booth water has been patented by two inventors here.

The water-contaminated solids are dissolved in a solvent having a lower boiling point than water, and of the same kind as that normally used in applying the coating material. The mixture is then distilled under vacuum, at a temperature below the boiling point of water. The distillate is condensed, and the solvent returned to the solution of coating material solids. Portions of the solution of water-free coating materials are periodically removed, and water-contaminated solids are added, without interrupting the process.

Industry Increases Use of Special Liquid Curbay

Widely used as an extender for molasses in dairy and hog feeds, U.S.I.'s Special Liquid Curbay is finding increasing industrial use as a binder — in foundry core and molding sands, in briquetting, in thickening agents, in impregnating paper. Available in tank-car quantities without allocation limitations, it is handled just like molasses in storage or mixing equipment.

New Glass Cleaner Patented

A patent has been granted for a glass cleaner consisting of an aqueous solution of 20 to 50% methyl, ethyl, or propyl alcohol in which 0.02 to 0.2% tetra sodium (or potassium) pyrophosphate is added to prevent haze formation.

Produces Lower Alkyl Ethers of Methylolurea

Announcement is made of a patent covering the treatment of dimethylolurea with methyl, ethyl, propyl, or butyl alcohol. The reaction is carried out at a pH of at least 9.0 until an ether of a methylolurea is formed, and then terminated prior to resinification. Termination of the reaction is effected by removal of the ether from the alkaline solution, as by chilling.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

Electrically-conductive rubber, originally developed for de-icing aircraft propellers, is finding use in explosives manufacture to eliminate the hazard of static electricity and replace former non-ferrous metals subject to corrosion. Resistance of the new rubber is said to run as low as 5,000 to 10,000 ohms per centimeter cube. (No. 749)

U S I

A new paint vehicle, combining drying, high thinner tolerance and compatibility with most resins is announced. The product is said to possess all the best qualities of linseed oil, plus some desirable new properties, and to allow greater production on limited oil quotas. (No. 750)

U S I

A synthetic filter cloth, which the maker reports to be highly resistant to both strong acids and alkalis, is facilitating many continuous filtering operations in the synthetic rubber, explosives, and petroleum industries. (No. 751)

U S I

A substitute for morphine, which has been under chemical tests for three years, is now being made generally available to the medical profession. (No. 752)

U S I

Resiliency measurements, important to manufacturers and consumers of rubber and other extensible materials, is facilitated by a new instrument which measures the rebound of a weighted plunger dropped from a predetermined height. (No. 753)

U S I

A new insulating glass, suitable for ovens and furnaces as well as for towers, tanks, etc., is announced. Of low heat conductivity due to its cellular structure, the glass is said to be fire and vapor-proof and impervious to moisture. (No. 754)

U S I

Sealing the seams of bolted tanks used to store gasoline and other fuels is possible with a new synthetic rubber compound which comes in strip form. The strip is claimed to be so flexible it can be wound, at minus 70°F., on a 1/2-in. rod without cracking. (No. 755)

U S I

A new spray-degreasing booth, reported by the manufacturer to hold losses of war-scarce solvents to new low figures, is announced. (No. 756)

U S I

Pecan shell oil is now being offered for sale in large quantities. Said to be the equal of olive oil for table use, it is also useful in the making of dyes and high-grade soaps. (No. 757)

U S I

A new adhesive said to be both thermoplastic and thermo-setting is reported in use in the production of plywood for military helicopters. The new material is stated to set in 20 minutes, as a permanently tough, heat-resistant, insoluble bond which will withstand three hours of boiling in water. (No. 758)

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Effect of NaOH on Dissolved Soap

*By Cornelia T. Snell, Benjamin P. Caldwell, Foster D. Snell and L. C. Cartwright**

ALL aqueous solutions of salts of fatty acids are alkaline. In solutions of the order of 0.05-1.0 percent this is approximately at the level of pH or 0.0001 M. The alkalinity is produced by hydrolysis of the salt which is in turn promoted by two factors. These are the relatively weak acidity of fatty acid as compared with the strong alkalinity of the base with which it is combined and the removal of fatty acid through formation of either acid soap or acid micellae. Only a trace of free fatty acid is present in a soap solution, not enough to saturate the water[1].

In 0.1 percent solution of soap, which is close to an average value for the laundry industry, hydrolysis has proceeded to the extent of about 3 per cent.[2] This hydrolysis can hardly explain the properties of the solution and they are sometimes attributed to charged aggregates or micellae.[3] From a consideration of his own data and that of other investigators, McBain has concluded that soap is a colloidal electrolyte. The conductivity equals that of an inorganic salt but one half of the conductance is due to a negative carrier which does not exhibit appreciable osmotic activity and is colloidal. This ionic micelle is probably stable, every active group being exposed like a bundle of eels tied together by their tails. The undissociated collodial electrolyte consists of neutral micellae; the ionic micellae of aggregated and hydrated fatty irons.[4]

In the presence of NaOH, as such, or as the product of hydrolysis, the ionization of both soap and water is repressed, and the whole equilibrium shifts in the direction of formation of more colloid.[2]

*Abstract of a paper delivered before American Oil Chemists' Society, Chicago, Oct 6, 7 and 8.

While commercial "builders" are sodium salts which hydrolyze to give controlled alkalinity, for the purpose of this work sodium hydroxide was used. It is used in limited areas and is in fact the best builder on certain theoretical grounds but not sufficiently foolproof for commercial use in general.

Conductances were run on various concentrations of sodium hydroxide and the same concentration of sodium hydroxide plus 0.1 percent soap solution. The differences between the conductance of the sodium hydroxide and the sodium hydroxide soap mixtures were called the apparent conductance of the soap. Results obtained varied by several hundred percent in some cases until it was found that control of conditions other than temperature was necessary. When the soap—NaOH mixtures were subjected to the same conditions of aging, comparable results were obtained. A concentration of sodium hydroxide up to 0.125 weight percent increases the conductivity but between that concentration and 0.25 weight percent the conductivity declines to below that of the original soap solution.

It was also noted that the solutions of soap and sodium hydroxide became increasingly opaque as the concentration of sodium hydroxide was increased up to 0.375 percent. Above that concentration a flocculation occurred which increased with the concentration of sodium hydroxide.

If, as has been stated by Quick,[3] the mobility of soap ions is comparable with that of the chloride ion, and we consider this a weak electrolyte in dilute solution and apply the Arrhenius equation, it is thought that this will give an approximation of the degree of ionization. The pH of the solution gives us an hydroxyl ion concentration of $1x10^{-4}$ which must be balanced by a similar sodium ion concentration. The conductance of the soap solution was $332x10^{-6}$ mho. The conductance of $1x10^{-4}$ N NaOH is calculated from literature values as $31x10^{-6}$. This leaves $301x^{-6}$ as the conductivity due to the sodium oleate which is not hydrolyzed. Under the conditions of the experiment the conductance of sodium chloride at infinite dilution is 162.2 mho per equivalent. When we calculate the equivalent conductance of the sodium oleate from the experimental data cited above we find it to be 94.4 mho. Then, according to the theory that the oleate ion has a conductance comparable with that of chloride ion, the ionization of the sodium oleate is of the order of 94.4/162.2 or 58 percent.

While admittedly this value for ionization of the sodium oleate rests on an assumption which may be invalid, it is certainly an indication of the order of magnitude and can be corrected to give a greater degree of accuracy at any later date when the conductance of the oleate ion becomes available with a higher degree of accuracy. The effect of addition of salts which hydrolyze offers greater complexities. One may predict with reasonable assurance, however, that the sodium hydroxide will have the expected result on the soap, however complex the other effects may be.

Summary

Sodium oleate in 0.1 weight percent solution is in true solution and ionized to the extent of about 50 percent.

When sodium hydroxide is added to this soap solution the dissociation is repressed. This is shown by a decrease in the apparent conductance of the soap. The solution become increasingly opaque as the sodium hydroxide concentration increases until a "salting out" effect gives a flocculent suspension.

Above a relatively low concentration of sodium hydroxide the conductance of the sodium hydroxide—soap mixture is less than that of sodium

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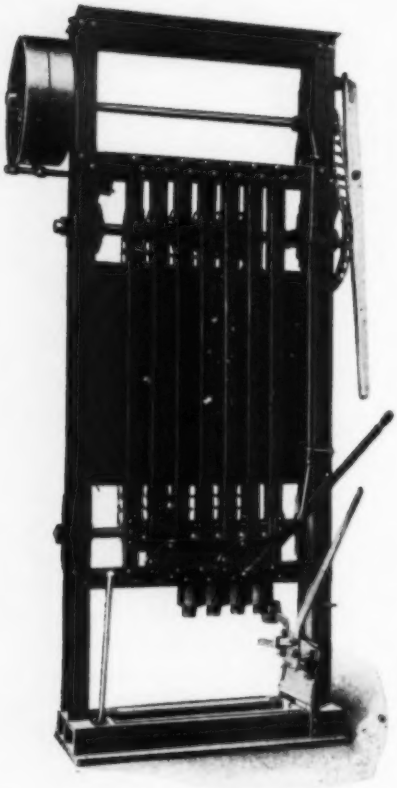

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hydroxide alone at that concentration. This would seem to indicate adsorption of sodium hydroxide on the soap micellae removing some of the Na^+ and OH^- ions as carriers of electricity. The amount of sodium hydroxide so adsorbed depends on the concentration of the sodium hydroxide and the conditions to which the sample has been subjected.

All soap builders hydrolyze in aqueous solution to give sodium and hydroxyl ions. Each of these will have its effect on the dissolved soap and the effects of builders can be qualitatively predicted in terms of the effects so produced.

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2. Foster D. Snell, Ind. Eng. Chem. *24*, 76-80 (1932)
3. James W. McBain and H. C. Martin, J. Chem. Soc. *105*, 957-77 (1913).
4. James W. McBain, "Third Report on Colloid Chemistry," His Majesty's Stationery Office, p. 412 (1920).

Fatty Acid from Hydrocarbons

The oxidation products of high-molecular aliphatic hydrocarbons are catalytically heated at 300-400° C. with an amount of steam such that the saturation vapor pressure of the steam is maintained. The heating is continued until the values of the acid number and of the saponification number of the fatty acids do not vary greatly from each other. The fatty acids in the reaction mixture are saponified, the nonsaponified fraction separated and the soaps split to liberate the free fatty acids. A. Gehrke and H. Pardun, to Roblee & Thorl G.m.b.H. German Patent No. 722,617.

Fatty Acid Recovery

Fatty acids are obtained from the distillation residue of paraffin oxidation products. The latter are first saponified. The unsaponified components are removed and the residue is acidified. The acidified crude fatty acids are distilled and the distillation residue is treated. A. Gehrke and H. Pardun, to Noblee & Thorl G.m.b.H. German Patent No. 723,294; through Chem. Abs.

Special Doctor Blades

A large soap manufacturing company has reported that when using razor steel doctor blades to scrape the soap from the chilling rolls, it was necessary to stop the machinery for 10 minutes in each eight-hour period in order to hone the blades. This stoppage represented a rather large weekly production loss. In an attempt to remedy the trouble, doctor blades of heat-treated "K" Monel metal were installed. At the end of 188 hours of continuous operation with the new type of blade, only two honings had been required. The wear- and corrosion-resisting properties of the new blades had therefore increased production. J. M. Vallance. *Soap, Perfumery & Cosmetics* 16, 528 (1943).

Use of Elaidin Reaction

The elaidin reaction is useful in investigating oils and has been applied to olive, peanut and soybean oils. The glycerides crystallized best from acetone and poorly from benzene. By fractional crystallization, olive oil yielded large amounts of trielaidin and some elaidodipalmitin. Peanut oil yielded principally trielaidin and stearodielaidin. Saturated glycerides were not found. The experiments indicate that soybean oil contains oleodipalmitin. A. Bomer and K. Kappeller. *Fette und Seifen* 49, 353-9; through Chem. Abs.

Solvent Evaporation

The distillation and evaporation rates of mixtures of various solvents such as those used in dry-cleaning, including test naphtha, amyl acetate, butanol, cyclohexanone, isobutanol and propyl acetate, with chlorinated hydrocarbons such as carbon tetrachloride, ethylene dichloride and chloroform, were investigated. Fractional distillation showed that higher-boiling components started to distil at a lower temperature than usual when ethylene dichloride was present. In certain cases the chlorinated hydrocarbon increased the rate of evaporation of solvent, whereas in other cases it had no effect on the rate of evaporation of the solvent. The lowering of the flash point of certain mixtures by carbon tetrachloride for a definite concentration range is thus clarified. G. Zeidler and P. Meyer. *Farben-Ztg.* 47, 17-18.

Trichloroethylene as Cleaner

Trichloroethylene, used as a dry-cleaning solvent in the absence of the more desirable perchloroethylene, has the disadvantages of removing some dyes from acetate rayon, and also of developing acidity with repeated use. The latter trouble can be overcome by inserting a soda-ash filter in the line as the solvent passes from the still to clean storage. The temperature of deodorizing should be kept as low as possible. In the winter the cylinder and shell of the machine can be cooled by an artifically induced blast of cold air. Perfume on a garment increase its susceptibility to dye removal. The Canadian Research Institute of Launderers and Cleaners, No. 4, September, 1943.

Mildew Resistance Tests

Details are described of a soil-suspension test for the effectiveness of treatment to prevent mildew on fabrics. Five of the nine finishing treatments as applied were found effective when tested by this method. They were: Copper naphthenate, cuprammonium hydroxide, lead acetate with potassium dichromate, and the natural dye extracts—cutch and osage orange, with copper sulfate and potassium dichromate. Copper sulfate with soap gives considerable protection, since samples treated with this lost only 25 per cent of their tensile strength. Under many conditions of use this treatment would no doubt be entirely satisfactory. Margaret S. Furry and Marian Zawetkin. *Am. Dyestuff Reporter* 32, 395-8 (1943).

Wool Washing with Synthetics

In the modern method of washing wool a bath is made at pH 6.4-6.9 with synthetic detergents plus formic acid, or at pH 6.5-7.2 with synthetic detergents only. M. Moescher. *Deut. Textilwirt.* 9, No. 8, 26-7; through Chem. Abs.

Take an Empty Drum Inventory Right NOW!

HERE IS A LIST OF EMERY PRODUCTS SHIPPED IN DRUMS

- Oleic acids
- Fatty acid derivatives
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- Twitchell Products, including:
  - Textile processing and finishing oils
  - Bases for metal working oils
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- Sanitone

New drums can't be had; the metal serves a more useful purpose elsewhere. Existing drums must work *full time*. You can promote better service from your suppliers by seeing to it that all drums are returned immediately after emptying. Why not make this the definite responsibility of one department in your organization?

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PRODUCTS AND PROCESSES

Glass-cleaning Fluid

About 20-50 per cent of methyl, ethyl or propyl alcohol is used with water and 0.02-0.2 per cent of tetrasodium or tetrapotassium pyrophosphate. The composition is suitable for use as a glass cleaner and to prevent haze formation on automobile windshields. M. T. Fraxman, to Union Oil Co. of California. U. S. Patent No. 2,313,425.

Synthetic Detergent

Compounds having wetting and detergent properties are formed by heating esters such as the monooctyl, monobutyl, or diamyl ester of *cis*-3, 6-endomethylene-1, 2, 3, 6-tetrahydrophthalic acid with sodium bisulfite. The heating is suitably carried out in ethyl alcohol with refluxing for 20 hours to four days. Paul P. McClellan and Jack C. Bacon, to American Cyanamid Co. U. S. Patent No. 2,314,846.

Alkaline Detergent

An alkaline detergent composition for soft metal contains 95 per cent of sodium metasilicate and at least 5 per cent of a water-soluble lead salt such as lead nitrate. Up to 35 per cent of caustic soda may replace part of the metasilicate. The lead salt is present to inhibit corrosion of the soft metal. Chas. Schwartz, to Hall Laboratories. Canadian Patent No. 415,489.

Fungicidal Washing Compound

A washing compound possessing desirable fungicidal properties and yet so mild in its action on the skin as to reduce any tendency to dermatitis, contains approximately 75 per cent of borax and 25 per cent of dry soap. The borax is in a finely granulated form so that when mixed with the dry powdered soap, gumming or caking will not take place. Such a product is a good hand cleanser and has proved to be an excellent prophylactic against the fungus disease of the skin and nails, called monila. *Chem. Trade J. & Chem. Engineer* 113, 254 (1943).

Soap from Milk

A jelly-like soap based on at least 80 per cent of whole milk, contains the following ingredients: an amine soap of a fatty acid, a hydrogenated oil having a relatively high melting point—to stabilize the product over a wide temperature range—a preservative, and a sweet-cream buttermilk powder. The latter three ingredients are present in amounts less than that of the amine soap. John E. McCormick. Canadian Patent No. 415,133.

Water Softener

Reaction products of chlorine-yielding compounds such as hypochlorite, with protein derivatives containing surface-active radicals, are used as dispersing agents for calcium soaps. Chem. Fabrik Grunau A.-G. German Patent No. 723,740.

Detergent Composition

A condensation product suitable for use as a detergent is formed from an aliphatic monocarboxylic acid having 10-18 carbon atoms such as lauric acid, a sulfosuccinic ester of an aliphatic alcohol having 6-10 carbon atoms such as sodium dioctyl sulfosuccinate, and a water-soluble salt of pyrophosphoric acid, such as the tetrasodium salt. The parts of each are as follows, 0.5-3, 5-10, and 10-50 parts, respectively. Coleman R. Caryl, to American Cyanamid Co. U. S. Patent No. 2,314,840.

Treated Filter Aid

A filter aid for incorporation in dry-cleaning fluid to adsorb color and fatty acids from the cleaning fluid, is activated by heating Georgia-Florida fuller's earth until the water of hydration is less than 6 per cent but not less than 1 per cent. The earth is ground to a particle size of less than 150 microns. Such a treated and prepared powder will enable 50 per cent more clothes to be cleaned in the same time than with an equal amount of untreated clay. O. Fitz Simons and R. G. Capell, to Floridin Co. U. S. Patent No. 2,315,410.

Filled Soap

When soaps are to be filled with alkali silicate, the fats are saponified with a concentrated metasilicate solution in a cold or semi-warm condition. C. Bergell. German Patent No. 700,266; through Chem. Abs.

Naphthenic-acid Soap

Technical naphthenic acid has an acid number of 230 and an iodine number of 9.2. It contains 9.2 per cent of unsaponifiable matter and 0.3 per cent of sulfur. Caustic potash and triethanolamine are suitable saponifying agents. The soap is mostly used in 2 per cent solution as an emulsifier, for which purpose it surpasses sulforicinate. It has good stability in the cold and does not gel. Other useful properties are that it opposes oxidation and has antiseptic action. Rinoldi. Laniera 55, 527; through Chem. Abs.

Washing Flakes

A flaked detergent is made of fatty alcohol sulfates or their derivatives, and water-soluble cellulose alkyl ethers. O. Linhart & Co. German Patent No. 724,117.

Mold Preventive

Fabrics are protected against bacteria and fungi by means of *para*-chloro-*meta*-*cresol*. A. Foulon. Farber und Chemischreiniger 1942, 35; through Chem. Abs.

pH Control in Soap Boiling

An antimony electrode is used for controlling the pH during the saponification and neutralization processes in soap boiling. The temperature of the electrode and of the leads is kept at the same value as that in the kettle. T. Hesse. German Patent No. 722,289; through Chem. Abs.

FDO-86

New WFA Order SPOTLIGHTS Tall Oil!!!

Designed to stretch soap makers' fat and oil supplies, the new WFA order FDO-86 spotlights Tall Oil as a logical addition to many soap formulas.

FDO-86 prescribes substantially increased use of Rosin (WFA defines Rosin as Crude and Refined Tall Oil, Rosin Acids, etc.) in soap formulas. Dictated and permissive increases range from 2 to 15%, depending on the type of soap.

While for some percentage of this total the soap maker is given the option of replacing part of his present oil and fat use with *either* rosin or builders, there will be evident advantages in his choice of Rosin Acids, "Facoil" (Refined Tall Oil) or "Opoil" (Crude Tall Oil), as the replacement.

By selecting a raw material in the rosin group, which embraces Rosin Acids, Crude and Refined Tall Oil, the anhydrous soap content of the soap makers' finished product can be kept unchanged, avoiding the necessity of any price change or increase of package size. With its 60% Fatty Acid content, "Facoil" 328 (Refined Tall Oil) can be used in place of added builder, preserving price stability, soap content of the finished product and detergent qualities.

In many types of soap it is entirely possible to use 100% of "Facoil" or "Opoil" as the fat charge, making the maximum possible saving of scarce animal and vegetable fats and oils.

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"DEOIL"
Semi-refined deodorized Tall Oil
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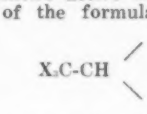
Complete copies of any patents or trade-mark registration reported below may be obtained by sending 25c for each copy desired to Lancaster, Allwine & Rommel. Any inquiries relating to Patent or Trade-Mark Law will also be freely answered by these attorneys.

No. 2,328,568, Process for Dedusting Comminuted Soap, patented September 7, 1943 by Bernard L. Maxwell, Reading, and Charles T. Atwood, Belmont, Mass., assignors to Lever Brothers Co., Cambridge, Mass. A method of dedusting bulk comminuted soaps comprising particles of varying sizes and including substantially in excess of 1% of particles passing through a 140 mesh sieve, comprising conducting the bulk soap in a continuously flowing thinly dispersed particle layer over a tortuous path with minimum disintegration of the particles, providing successive intervals of free gravitational fall of the particle layer at each successive change in direction of the tortuous path to form successive curtains of falling particles, passing a gaseous carrier medium counter to the flow of the curtains of falling particles and at an angle thereto, and at a velocity to provide a series of successive winnowing actions on the soap particles at each of the successive changes in direction of the tortuous path to entrain the soap dust content of the particle layer to an extent that the particles so treated will have less than 1% passing through a 140 mesh sieve, and separating the gaseous carrier medium with the entrained dust from the soap particles.

No. 2,328,690, Combined Deodorant and Germicide and Process of Making Same, patented September 7, 1943 by William Reginald Steele, Syracuse, N. Y., assignor to The Solvay Process Co., New York. A combined deodorant and germicide in the form of a cake comprising a mass of paradichlorobenzene having substantially uniformly distributed therethrough a germicide selected from the group consisting of dichloramine-B, dichloramine-T, and mixtures thereof, the cake not being disintegrated upon exposure to foul aqueous solutions by selective leaching of the germicide during evaporation of the major portion of the para-dichlorobenzene.

No. 2,328,726, Insecticide, patented September 7, 1943 by Frederick B. La Forge, Clarendon, Va., and Herbert L. J. Haller, Washington, D. C., assignors to Claude R. Wickard, as Secretary of Agriculture of the United States of America. An insecticide containing as its essential active ingredient an extract of prickly ash, Zanthoxylum clava-herculis L.

No. 2,329,074, Insecticide, patented September 7, 1943 by Paul Muller, Neu-Allschwil, near Basel, Switzerland, assignor to the firm J. R. Geigy A. G., Basel, Switzerland. An insecticidal composition comprising as essential active ingredient a compound of the formula

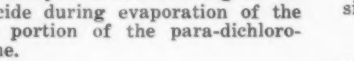


wherein X represents a member of the group consisting of chlorine and bromine and Y and Z each represent a radical connected at a carbon atom to the CH group, the radical being selected from the group consisting of monovalent aliphatic, araliphatic and aromatic radicals of the benzene series, and a carrier therefor.

No. 2,329,694, Dedusting Process and The Products Thereof, patented September 21, 1943 by John W. Bodman, Winchester, Mass., assignor to Lever Brothers Co., Cambridge, Mass. A process for treating granulated soap to reduce the amount of soap dust therein comprising applying to at least a portion of the surfaces, only, of soap particles a normally solid water-dispersible coating agent adapted to cause cohesion of the soap dust to the finely divided particles, to strengthen the particles physically and render them resistant to disintegration by abrasion and impact.

No. 2,329,861, Parasiticidal Preparation, patented September 21, 1943 by William P. Horst, Packanack Lake, N. J., assignor to United States Rubber Co., New York. A method which comprises extracting organic plant toxicants from plants selected from the group consisting of Derris, cube, timbo, devil's shoe string, pyrethrum flowers and tobacco by means of a composite oil produced by destructive distillation of rubber, whereby to produce an insecticide.

No. 2,329,884, Method of Preventing Growth of Fungi, patented September 21, 1943 by Morris H. Daskais, Chicago, Ill., assignor to Research Corp., New York. The method of preventing and controlling the growth of fungi on plant material and of disinfecting the same which comprises applying thereto a symmetrical organic mercury compound of the general structural formula (A)—R—Hg—C ≡ C—Hg—R(A) wherein (A) is an organic nitrogen-containing radical of the class consisting of the radicals



and R is a hydrocarbon radical of the class consisting of the aliphatic and alicyclic hydrocarbon radicals, the nitrogen atom of the nitrogen-containing radical (A) being bonded to a carbon atom of the hydrocarbon radical R.

No. 2,330,227, Parasiticidal Composition and Method of Preparation, patented September 28, 1943 by George E. Lynn, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich. A method for bonding solid water-repellent organic parasiticidal toxicants to finely-divided carriers comprising the steps of preparing a dispersion of the carrier and finely-divided toxicant in a dilute oil-in-water emulsion, and thereafter breaking the emulsion.

No. 2,330,234, Insecticide, patented September 28, 1943 by Clarence L. Moyle, Midland, Mich., assignor to The Dow Chemical Co., Midland, Mich. An insecticidal composition comprising di-(monochlorophenoxy)-methane as an active toxic ingredient.

No. 330,328, Apparatus for Dispensing Hypochlorites, patented September 28, 1943 by Walter S. Bachman, Los Angeles. In a device of the character described, a four armed cross member having two opposite arms therein providing a fluid inlet and an outlet, a vane supported from the third arm between the inlet and outlet arms and rotatable therein to vary the flow directly through the cross, and a plug mounted in the fourth arm and having a first passage longitudinally therein adjacent the inlet and a second passage longitudinally therein and adjacent the outlet, the first passage being of a materially smaller diameter than the second passage.

No. 2,330,340, Insecticide, patented September 28, 1943 by Curtis E. Dieter, George E. Lynn, and Bernard J. Thiegs, Midland, Mich., assignors to The Dow Chemical Co., Midland, Mich. An insecticidal composition comprising di-(4-chlorophenoxy)-methane and a phenothioxin compound as active toxicants.

Refining, Inc., Moves

Refining, Inc., Charlotte, N. C., has just announced that on and after Oct. 1, its New York office will be located at 70 W. 40th Street.

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EQUIPMENT

IF YOU want additional information on any of the items described below or if you want any of the bulletins, catalogs, etc., write to the MacNair-Dorland Co., Inc., 254 West 131st St., New York, mentioning the number of the item.

968—Phila. Quartz Drum Card

Philadelphia Quartz Co., Philadelphia, has just brought out an 8¾ x 11⅜" placard illustrating and explaining four conservation steps on how to make drums last longer. Printed in red and black on yellow, the card advises: "Handle drums with care; save plugs and replace them in drums properly; don't use drums for anything but silicate and return drums prepaid to works from which shipped. . . ." Copies of the poster may be had on written request to Philadelphia Quartz Co.

969—Hilo Dip and Ointment

Hilo Co., South Norwalk, Conn., has just issued a small folder on "Hilo" dip and ointment for relief from summer eczema on dogs. Causes and ways to eradicate summer eczema are outlined. The dip comes in one, three and six ounce, pint, quart, one-half and gallon bottles. The ointment comes in one and three ounce jars and 15 ounce cans.

970—Booklet on Maintenance

The Hillyard Co., St. Joseph, Mo., has issued a new booklet on "Modern Maintenance" containing information on new sanitation machines and methods for economical sanitation and maintenance of institutions. Illustrations of all types of floors are included along with suggested solutions to many maintenance problems.

971—Folder on "Benchlophen"

Kalusoff, Ltd., Springfield, Ill., has recently issued Technical Bulletin No. 15 for inclusion with shipments of its "Benchlophen" germicidal and fungicidal agent. Under the heading "General Disinfectant and Fungicidal Uses," the booklet points out in a paragraph on sanitary laundering these three principal considerations to be kept in mind in laundering clothes of men overseas: (1) Sanitation as it affects the health of the individual. (2) Prevention of the entry into this country of organisms that may cause disease. (3) Prevention of the entry into this country of organisms that may damage American crops and plants."

972—Patent Lists Available

The Office of Alien Property Custodian, Washington, D. C., has just issued a bulletin describing how to go about obtaining patents vested in the office of the Alien Property Custodian. For information, all inquiries should be addressed to the Office of Alien Property Custodian, Chicago 3, Ill. Classifications lists are 10 cents each, including lists of both patents and patent applications, except for the nine largest classifications costing 25 cents each. Printed copies of vested patents and drawings and specifications of patent applications may be secured from the Commissioner of Patents, Washington, D. C., for 10 cents each. Licenses to operate under patents or patent applications cost $15 each, and may be obtained by setting forth the information desired by the Alien Property Custodian's Office, which may be had on request.

973—Ungerer Price List

Ungerer and Co., Inc., New York essential oil house, has just issued its wholesale price listing. A 32-page book: 8x10¼", it contains a foreword by Fred Ungerer, head of the company, commemorates the 50th Anniversary of Ungerer and Co. The remainder of the book is devoted to price listings of essential oils, aromatic chemicals, flavors, etc. produced by the company. Due to scarcity of some materials and prohibitively high prices of others, on account of the war, there is a "wartime substitutes" listing on more than 30 products in this year's catalog.

Reduction of Fatty Acids

Methods for the reduction of fatty acids to fatty alcohols at both high and low pressures are described, as well as the selective reduction of unsaturated fatty acids. Formation of fatty acids from fatty alcohols is also discussed. The splitting of sperm oil and hydrogenated sperm oil into fatty acids by means of alkali and a high temperature yields palmitic and stearic acids. Utilization of the hydrogen formed from this reaction for hardening fats is indicated. K. Lindner. *Fette und Seifen* 49, 88-93; through Chem. Abs.

Akerite Glycerine Alternates

Akerite Chemical Works, Inc., Chicago, have announced the manufacture of an alternate or substitute for standard glycerine coming in three grades: Grade B-3, a plasticizer for paper; Grade B-200—designed as a "stretcher" or "extender" for standard glycerine in the manufacture of glues, pastes, adhesives, gelatines, printing inks, printers' rollers, etc.; Grade B-500 for drugs, medicines, foods and cosmetics.

OIL OF STYRAX

(*From Page* 36)

fixative. Oil of styrax is a valuable ingredient in all kinds of perfume compounds, especially those of oriental type.

16. "American Liquid Styrax," *Amer. Perf.*, July 1919, p. 161.
17. Private communication.
18. *Die Atherischen Ole*, 3d Ed. Vol. II, p. 790.
19. *Arch. d. Pharm.* 220 (1882), 648.
20. *Zeitschr. d. allg. österr. Apoth.-Ver.* 42 (1904), 943.
21. *Arch. d. Pharm.* 243 (1905), 218.
22. *Schweiz. Wochenschr. f. Chem. u. Pharm.* 43 (1905), 238.—*Chem. Zentralbl.* 1905, I. 1705.
23. *Arch. d. Pharm.* 248 (1910), 420.
24. *Arch. d. Pharm.* 239 (1901), 532.

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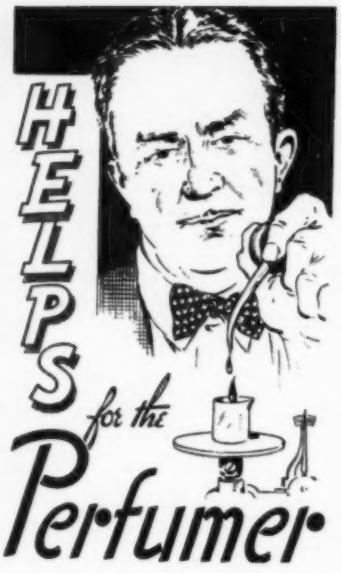

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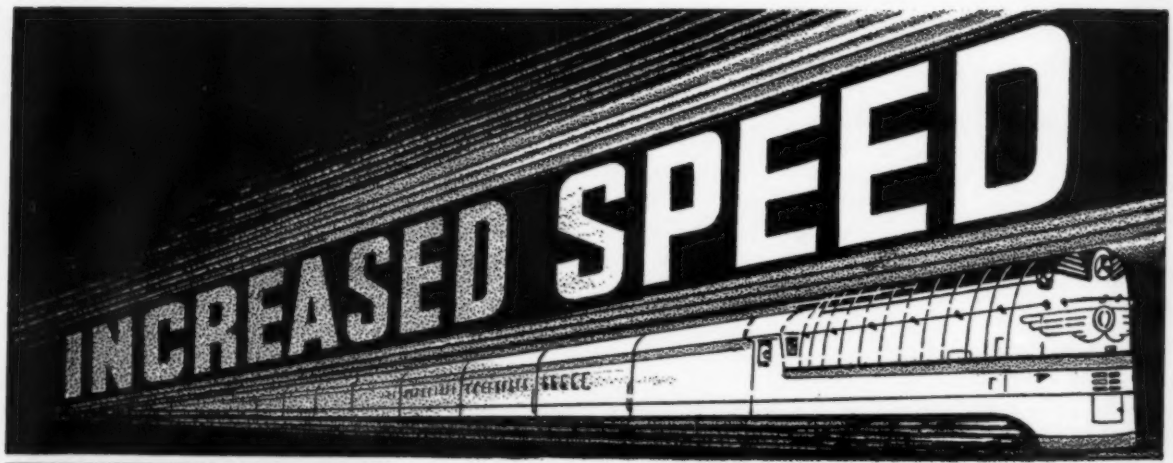
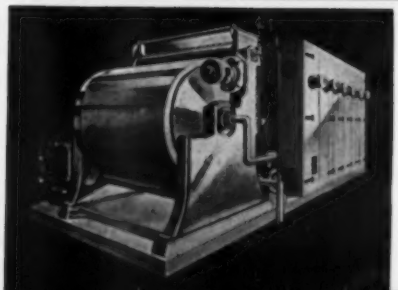
We have just completed our Catalogue "B"—Perfume Specialties, and will be glad to forward a copy to you upon request.





In producing flakes for granulated soaps, toilet cakes or packaging, high speed output can often be an item of great saving. With the New Proctor Flake Soap System, from the hot liquid soap in the kettle or crutcher to the dried flakes requires only 6 to 14 minutes and capacities may be obtained from 750 to 6000 lbs. per hour, according to flake thickness, character of soap, etc. At this stepped-up production, quicker deliveries are assured and there are tremendous savings in floor space and equipment. Complete details are contained in a new 16-page illustrated catalog that is yours for the asking.

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NEW PROCTOR *Flake Soap* SYSTEM

Splitting with Hydrogenation

Oils and fats are both split and hydrogenated at the same time in a continuous process in an upward flow in a column against a downward flow of water maintained under pressure in the liquid phase at fat-splitting temperatures. An emulsion composed of a fatty component and a glycerine-water component is formed. The emulsion is passed in contact with a porous filtering medium comprising a nickel hydrogenation catalyst, thereby separating the emulsion into its fatty component and its glycerine-water component, at each of a number of stations in the column. Hydrogen is introduced into the column to effect hydrogenation of fat at each of the stations in addition to the separation mentioned. B. Winer. U. S. Patent No. 2,313,692.

Autoxidation of Fats

Studies of autoxidation of fats and the influence of antioxidants are of value only when the same experimental conditions hold and a precisely defined test oil is used. As an antioxidant, quinone is less effective than hydroquinone, which is less effective than quinhydrone. Of the three nitro compounds investigated, *meta*-dinitrobenzene has more antioxidant action than *alpha*- and *beta*-dinitrophenol. Maleic anhydride has only slight antioxidant action. K. Taufel, J. Kochling and R. Muller. *Fette und Seifen* 48, 669-70; through Chem. Abs.

Separation of Unsaturates

A partial separation of saturated and unsaturated fatty acids, such as those derived from linseed oil or soybean oil, may be made by the use of selective solvents such as furfural or furfuryl alcohol. In this way one fraction is obtained relatively rich in unsaturated compounds, another fraction relatively poor in them. S. E. Freeman, to Pittsburgh Plate Glass Co. U. S. Patent No. 2,313,636.

Sulfite Addition

Fatty-acid esters containing an aliphatic chain of at least 10 carbon atoms in the fatty-acid radical are changed to sulfite derivatives by treatment with a sulfite for at least 25 hours at 70-110° C. K. Diehl, to Chem. Fabrik Stockhausen & Cie. German Patent No. 721,991; through Chem. Abs.

Fat Processing

To prevent reversion of fatty material, the latter is hydrogenated to an iodine number below 15. A stream of air is passed through the hydrogenated fat at 95-150° C., after which steam is passed through at 175-235° C. under a vacuum. H. H. Young and H. C. Black, to Industrial Patents Corp. Canadian Patent No. 415,318.

Sulfonates from Kerosene

Higher aromatic sulfonates having detergent and emulsifying properties are produced from nonaromatic hydrocarbons and aromatic compounds, such as those obtainable from a kerosene fraction of Pennsylvania oil, by halogenation of the nonaromatic hydrocarbons, condensation of the alkyl halides with an aromatic compound with the use of aluminum chloride as a condensation catalyst. This is followed by sulfonation. Lawrence H. Flett, to Allied Chemical & Dye Corp. U. S. Patent No. 2,314,929.

Detergent Evaluation

Methods of evaluating washing agents include measurement of the foam number, the half-time value of foam breaking, the pH, and the surface tension of the solution. These are determined almost simultaneously in the same testing vessel at the time the solution is made. Theodor Hesse. German Patent No. 723,097.

Odor Removal

Oils or fats are treated to remove odorous substances and other volatile admixtures by steam distillation in a series of distillation vessels arranged consecutively. The first of these is operated at the highest temperature. The temperature is gradually reduced in each consecutive vessel. In the last one a temperature is maintained at which no more decomposition or degradation products of the oil are formed. O. Brucke, to Metallgesellschaft A.-G. German Patent No. 723,436; through Chem. Abs.

Solution and Diffusion Oil

The extraction of oil seeds is carried out by a rapid and complete separation of solution oil. The most effective extraction is based upon a spraying of the material from above, at the same time continually decanting the miscella without disturbing the material being extracted. The total solution-oil can be separated in this manner in the shortest time without raising the temperature.

Removal of the diffusion-oil takes place best by the addition of hot benzine. This is allowed to act over a period of hours with frequent stirring of the materal being extracted. The miscella which are dissolved in the diffusion oil are removed by repeated spraying concomitant with continuous draining off of the miscella. K. Matejka. Fette und Seifen 48, 671-5; through Chem. Abs.

Glycerine Determination

The pyridine acetylation method for the determination of glycerine checks dichromate oxidation very closely. The former method therefore becomes extremely valuable as a means of checking oxidation values on dilute solutions of glycerine by acetylation, a procedure which was formerly practical only on concentrated glycerine samples. J. C. Moore and E. W. Blank. *Oil & Soap* 20, 178 (1943).

Oil in Aqueous Solution

Certain substances insoluble in water can be dissolved in the following manner. Fatty acids are mixed with an organic base and heated, and benzyl alcohol added to the mixture. The substance which it is desired to dissolve in water is incorporated with the above mixture and distilled water is added. In this way aqueous solutions of oils, fats and waxes can be prepared. R. H. Marriott. British Patent No. 546,998.

Pecan Shell Oil

Pecan oil is reported to be available in large quantities from the Planters Cotton Oil Co. of Weatherford, Texas. This oil is said to be the equal of olive oil for edible purposes and to be suitable for making high-grade soaps.

Bactericidal Detergents

Some quaternary ammonium compounds possess both high bactericidal power and excellent detergent activity. In order to determine the effect of structure on these properties, a study was made of the bactericidal values of a homologous series of fatty-acid esters of colamino formyl methyl pyridinium chloride, in which the length of the carbon chain in the fatty-acid radical was varied from C_8 to C_{18}. The results show that the compounds prepared from C_{14} fatty acid possess the highest phenol coefficients—500 for *S. aureus* and 333 for *E. typhosa* at 20° C., and 785 for *S. aureus* and 343 for *E. typhosa* at 37° C. or approximate body temperature. The compounds prepared from C_8 fatty acid possessed the lowset phenol coefficients.

Detergent tests using standard soiled test cloths were made with some of the members of the homologous series. The results show that the compounds prepared from C_{12}, C_{14}, and unsaturated C_{18} (oleic) fatty acids and mixtures of these, are considerably superior in detergency to soap, even when the synthetic detergents are used at 0.03 per cent concentration and low-titre soap at 0.2 per cent. These particular synthetic detergents were about twice as effective in detergent power as other quaternary ammonium compounds which do not have carboxyl and amide linkages in the molecule.

No direct correlation appears to exist between detergency and bactericidal activity. A. K. Epstein, B. R. Harris, M. Katzman and S. Epstein. *Oil & Soap* 20, 171-4 (1943).

Alcohol Sulfate Purification

Fatty alcohol sulfates are produced and purified as follows: Aliphatic alcohols containing 10-25 carbon atoms or mixtures of such alcohols and olefines of similar molecular weight, are sulfonated and the product neutralized with alkali. A water-soluble inorganic salt is added to the neutralized solution, which is then extracted with an ether containing less than six carbon atoms in its molecule. In this manner the neutralized sulfonated products are freed from nonsulfonated and nonsulfatable matter. J. J. Owen, to H. Beller and Jasco, Inc. Canadian Patent No. 415,534.

SYNTHETIC DETERGENTS

(*From Page* 33)

Wetting agents are now added to buffing compounds for the industrial polishing of metals. This makes cleaning of the metal easier after the buffing, as the particles of metal and of buffing compound can then be washed away readily. Metal cleaning prior to electroplating is made very effective by the addition of a small amount of suitable surface-active agent to the cleaning liquid. Agents are also used in acid plating baths to give better wetting and smoother plating.

Synthetic agents have been tried as emulsifiers in water-base floor wax but without much success. They tend to decrease the resistance of the dry wax film on the floor to the action of water. Soaps made with ammonia or with synthetic amines such as triethanolamine, are better emulsifying agents for this purpose because of their instability; they decompose, at least partially, to leave water-resistant fatty acids as a part of the dry film of floor wax.

Wetting agents in insecticides aid spreading and permit the material to wet the leaf or plant surface. For example, Bordeaux mixture has better covering power and is greatly improved in performance by the addition of a small amount of surface-active agent. An associated use is in the washing of fruit with a solution of wetting agent to remove spray residues.

Suitable compounds serve as dispersing agents for pigments in water-emulsion paints, oil paints, and printing inks. The deflocculating effect secured permits the incorporation of more pigment, resulting in greater covering power; at the same time increased flow and improved gloss are obtained. Agents are also used to disperse fillers and pigments in rubber.

In the paper trade, adhesives and paper sizes now contain added wetting agents. Synthetic detergents are used for cleaning paper equipment and the felts on paper machines. Paper towels are treated with a wetting agent to make them more water-absorbent.

Many other widely different uses could probably be listed, some of them somewhat minor as concerns volume, such as in the cleaning of jewelry and watch parts. These, together with examples given throughout the paper, illustrate the variety of possible applications and may suggest still others. When any surface is to be wet by a liquid, it would appear that addition of a suitable surface-active agent will increase the speed and efficiency of such wetting, promoting either spreading or penetration, according to the nature of the surface.

Conclusion: It will be seen that by properly balancing a hydrocarbon chain with one or more solubilizing groups, synthetic compounds can be prepared having surface-active, and in some cases, marked detergent properties. By avoiding the —COONa group, compounds more stable than soap in hard water and in acid solution are obtained. The number of possible solubilizing groups which may be used is much greater than given in the list. Vast numbers of surface-active compounds can therefore be formulated. This multiplicity is illustrated in a patent in which nearly one hundred specific examples are discussed[8]. Several manufacturers make a number of chemically different compounds, using one trade name for their line, but differentiating the products by different letters after the name.

A tabulation of present commercial agents list over 200[9]. Variations are introduced to avoid previous patents and to meet specific industrial needs. The number of patents is legion, although the number of really successful commercial products is much more limited.★★

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[6] Foster Dee Snell, *Ind. Eng. Chem.* 35, 107-17 (1943).

[7] E. T. Williams, C. B. Brown, and H. B. Oakley, "Wetting and Detergency," p. 173. Chemical Publishing Co., 1939.

[7] A. L. Rawlins, L. A. Sweet and D. A. Joslyn, *J. Am. Pharm. Assoc.* 32, 11-16 (1943)

[8] B. R. Harris, U. S. Patent No. 1,917,250.

[9] F. J. Van Antwerpen, *Ind. Eng. Chem.* 35, 126-30 (1943).

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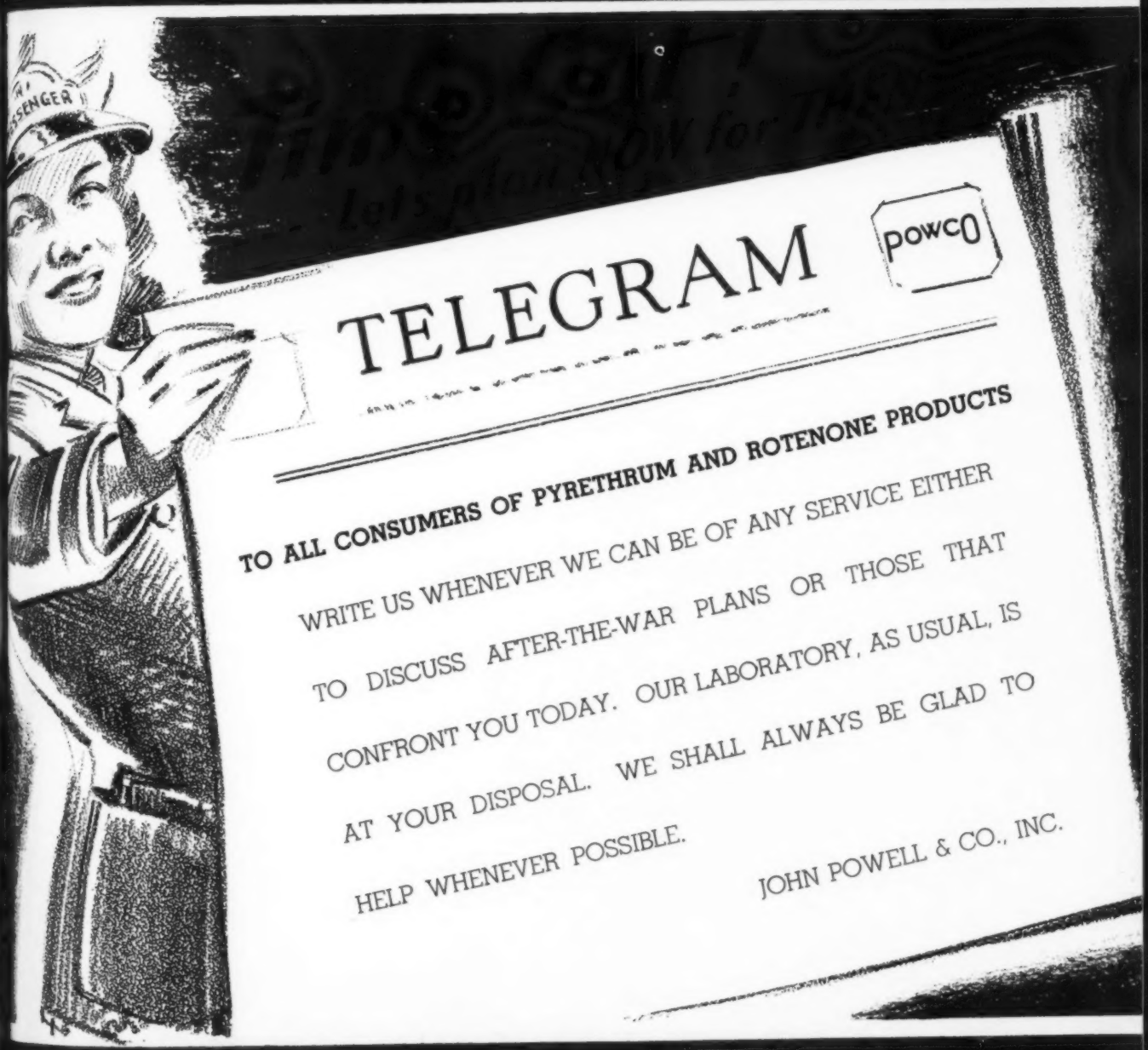
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INSIDE NEWS

NOVEMBER PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1943

Food Industries In Unique Wartime Position Need Practical Program In Washington

Photo From U. S. Army

Eager hands of French children reach out for cans of condensed milk being distributed by an Army sergeant, member of the U. S. task force in Oran, Algeria. Half the milk ration of U. S. troops in Oran was given out in this manner. Allied forces have also made available a quantity of powdered milk to be distributed to children up to the age of fourteen in North Africa.

For many food manufacturers, the end of the war will be the beginning of full-scale "war production." Characteristic of food's special position is the fact that *while supply increases with the Navy's success, demand increases with the Army's success.* Military as well as humane reasons dictate need to feed liberated areas.

Federal controls and rationing are therefore expected to continue for some time irrespective of military decisions in any part of the world. The best that can be expected is a gradual increase of administrative efficiency and practical thinking in the alphabetic potpourri of agencies now in control of U. S. food supplies and prices.

With OPA, FDA, FPA, Army demands, Lend Lease demands and sundry long-range "win-the-peace" planners pulling and hauling before specific directives can be arrived at in many cases, prediction of short-term Federal activity is next to impossible.

The recent trend towards introducing experienced business brains into food administration, and the repeal of grade labeling requirements which had been written into maximum price regulations, are indications of possible improvement. Here's how, food men say, the Government should enter into the picture:

1. Government should determine overall national food needs.
2. Government should then hold the proper sections in food production and distribution responsible for detailed planning.
3. Government should then cooperate in seeing that the plan gets results . . . that regulations are really effective.

U. S. Food Notes: Government has been and is accumulating *a vitamin A stockpile* for use in liberated areas, also purchasing seeds in advance . . . Need to calm consumer buying by *increased imports from Latin America* is foreseen in certain quarters. In view of naval successes, only step required is positive request from War Food Administration for ships and space . . . *Feed for livestock and poultry* is now so reduced that large marketings may end meat shortage for several months, but cut egg supply.

World Food Notes: Canada is expected to have turned 7,500,000 bushels of wheat into industrial alcohol by the end of '43 . . . *New sorts of basic foodstuffs are taking hold in Africa* under impact of war. Africans are meeting current grain shortage by return to cassava starch and manioc root . . . Australia is producing 1,000,000 *cans of Australian-grown vegetables a week* for the services. Canning techniques there have been established with the help of American experts. 471

Gum Guaiac Not Used Extensively In Preserving Food For Armed Forces

Gum guaiac is being used by Swift & Company in the stabilization of certain fats and oils, particularly lard; fatty foods in paper wrappings, for instance, are stabilized in contact with the package. Gum guaiac in meat dehydration is still experimental, and is not being used in dehydration of fruits and vegetables. It is not being used in large-scale preservation of food for the armed forces, as stated in the July issue of *Inside News.* 472

Vitamins Made In Cheese

Cheese makes its own vitamins, investigators have discovered. Vitamins of the B complex appear to be synthesized and stored in the outer portions of certain cheeses during the curing period. The types of cheese tested were Camembert, Brie, Liederkranz and Limburger. 473

Spoilage-Free Foods Seen

Foods can be freed of the thermophilic, or heat-resisting bacteria that cause spoilage, in from 1½ to 2 minutes of treatment by a new process for which a patent has been filed. Details of the process, developed after a year of research work, will not be available until the patent has been granted, but it is claimed that the process is applicable to various foods such as sugar beets, beans, soybean flour and other products. The cost of the treatment is said to be extremely low. 474

Peavine Silage as Cattle Feed

Findings of an Agricultural Experiment Station should help pea canners allay the fears of any of their growers who may have believed that feeding of pea silage to cattle made the cattle susceptible to a disease which caused them to stagger and go down. 475

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Synthetic Rubber Putty

A new putty, in which man-made rubber entirely replaces natural crude rubber formerly used, is superior to the previous product, according to the nationally recognized manufacturer. At the present time it is employed chiefly for sealing metal joints in combat equipment, though diverse uses are suggested. 476

Oil Purifiers

Lubricating and heating oil reclaimers, with capacities ranging from two and one-half gallons in 70 to 90 minutes to 120 gallons in the same length of time, are available in 11 models and two series, both types using contact filtration in which common refinery earths, available on the open market, are used. These reclaimers are recommended for restoring all types of used oils, including drained oils, from a wide range of installations.

The machines are said to be capable of reclaiming used oils without presettling or pretreatment and restoring the oils to substantially the same values of fire, flash, viscosity, color, neutralization number and precipitation number as the new parent oil. Operated under thermostatic control, they permit the man working the machine to do so incident to his regular duties.

Of potential value to organizations having their own fleet of trucks and motor cars, as well as to plant and manufacturing processes of companies. 477

Aerosol "Bombs"

A new insecticide concentrate has just been patented by a Bureau of the United States Department of Agriculture. At the present time, the Armed Forces are taking the entire output of these aerosol bombs, which are being made commercially by four companies. The concentrate is contained in a steel cylinder, which acts both as a container and a dispenser, a valve serving to release the insecticide in the form of a fine mist or fog. Because droplets of insecticide dispersed into the air in this way are much smaller than those dispersed by the usual sprayer, they have been proved to be more toxic to insects. 478

Pest Damage Needs Control

Total annual damage to our food supply through the attacks of insects and rodents runs to approximately two billion dollars. The estimated loss is approximately six to seven per cent of our total available food or about the amount we lend-leased to all our allies last year. Pest control through intelligent and repeated use of insecticides is thus more important than ever as a wartime necessity. A list of 10 leading insects from standpoint of the damage they cause is available. 479

Technical Topics

TEXTILE PRESERVATIVE — Waterproofing and rot-proofing of textiles has been seriously studied in Australia to meet moist, high temperatures. Copper compounds, applied in hot impregnation, using copper-soap emulsions or mixtures of emulsions of copper soaps and suitable waxes, have proved most effective. 480

FISH INCREASE—Foreign experiments in a fishing community show that fish can be multiplied as much as ten times by the addition of certain compounds and phosphates to the water in a manner similar to the fertilization of land. 481

GARMENTS FROM OCEAN—Among the many products Britain expects to manufacture in a new postwar industry using seaweed is an inexpensive fabric. 482

INFECTION AVOIDED — Australian process for sucking eggs from their shells for dehydration without the pulp touching the outer shell, or contact with hands, claims complete safety from infection. From 100,000 to 1,000,000 bacteria and 200 to 500 mould spores tests show on the outer surface of an average clean egg. 483

PINE NEEDLES—A vitamin valuable in the daily human diet has been discovered in research on pine needles by Russian scientists. 484

INVISIBLE RAINCOAT—An invisible raincoat is formed on cloth, paper and other materials by exposing them to chemical vapors which make them waterproof. The "raincoat" is so thin, its structure cannot be determined by chemical analysis or seen under a high-powered microscope. 485

JOJOBA—Experiments in growing jojoba bush under irrigation near Florence, Arizona, is an expansion of the commercial use of this bush which grows in semi-arid regions of Mexico and has been a new source of wealth for this country. 486

DEAD SEA SALTS—Palestine's new industry is producing chemical salts evaporated from the Dead Sea, in open evaporation pans by a new secret process, it is announced. 487

"ROTTEN CABBAGE"—Odors for detection are not new. Peppermint has been used to find a leak in pipe lines. Now the United States Bureau of Mines advises mine owners to use a chemical which smells like rotten cabbage, as a warning to miners to leave a dangerous level. 488

SODIUM CELLULOSATE—Has been introduced in Britain for use as a thickening, emulsifying, demulcent, glossing and starching agent. The material does not itself ferment, and is resistant to fungal and bacterial growths, it is declared. 489

FLUE DUST—Iodine and potassium chloride recovery from blast furnace flue dust has been advocated in Germany. 490

SODIUM METAL—Is now being used as a coolant in the exhaust valves of aircraft engines. 491

PROPYL GALLATE—Was suggested recently in Britain as a suitable agent for inhibiting the autoxidation of animal and vegetable oils. The material was found to be soluble in oils at relatively low temperatures, and to apparently have a low degree of toxicity. 492

FORMIC ACID—Can be synthesized directly and in high yield by the action of carbon monoxide on water vapor in the presence of certain catalysts, according to a recent article in German technical literature. 493

ANEMIA AID—The injection of red blood cell suspensions produced favorable results in anemic patients, in recent investigations by three physicians in the United States Medical Corps. Beneficial results were reported in 44 of the 48 test cases on which the report was based. 494

CUPROUS CYANIDE—Production by a simplified method was recently described in a British technical journal. The new method was declared to produce a material much lighter in color than by older methods, which is of especial advantage in making cuprocyanide solutions for use in the Sandmeyer reaction for preparing aromatic nitriles. 495

DEHYDRATION—The results of research on nutrient losses in manufacture and preparation of dehydrated vegetables indicates that these products should be used only in soups or stews and that all soaking and cooking waters should be made a part of the soup or stew, according to the authors of a recent paper. 496

VITAMINS IN SUGAR—Whole mature sugar cane is a fair source of thiamin and riboflavin, rich in pantothenic acid and a good source of niacin, according to findings reported recently. 497

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquiries to the original source of the article. Write to National Can Corporation, 110 East 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

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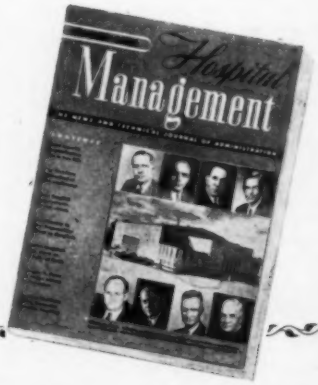

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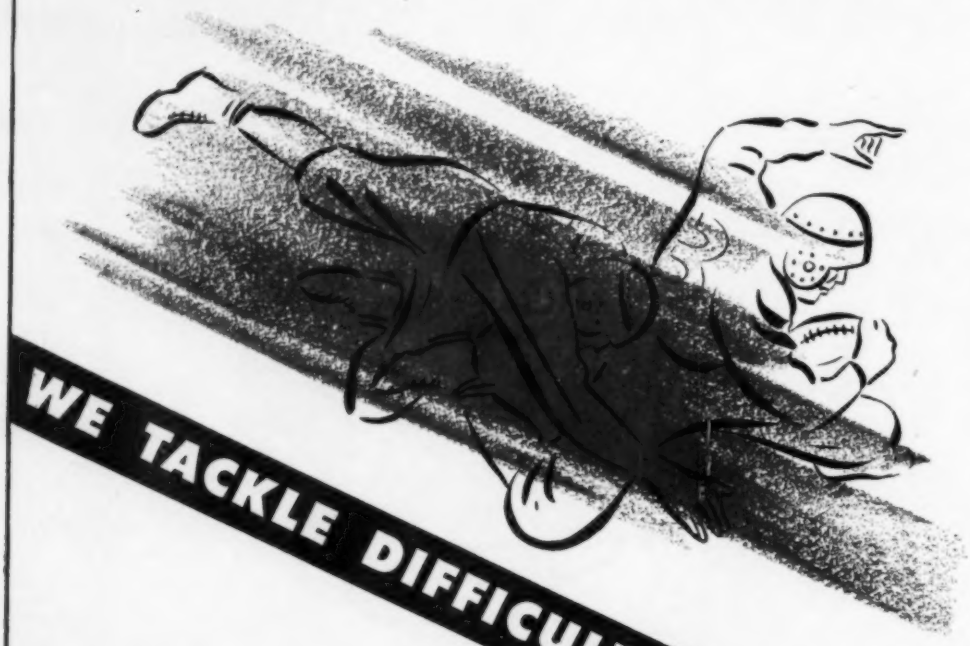

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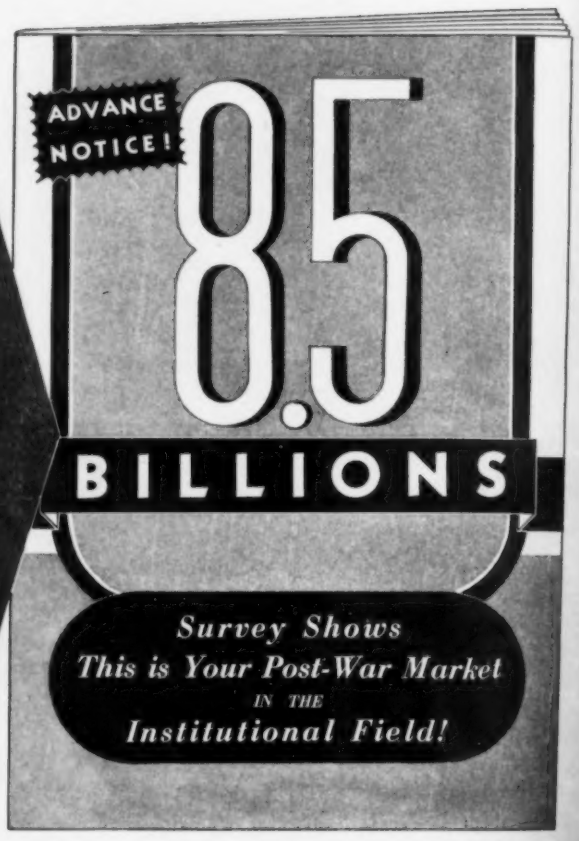

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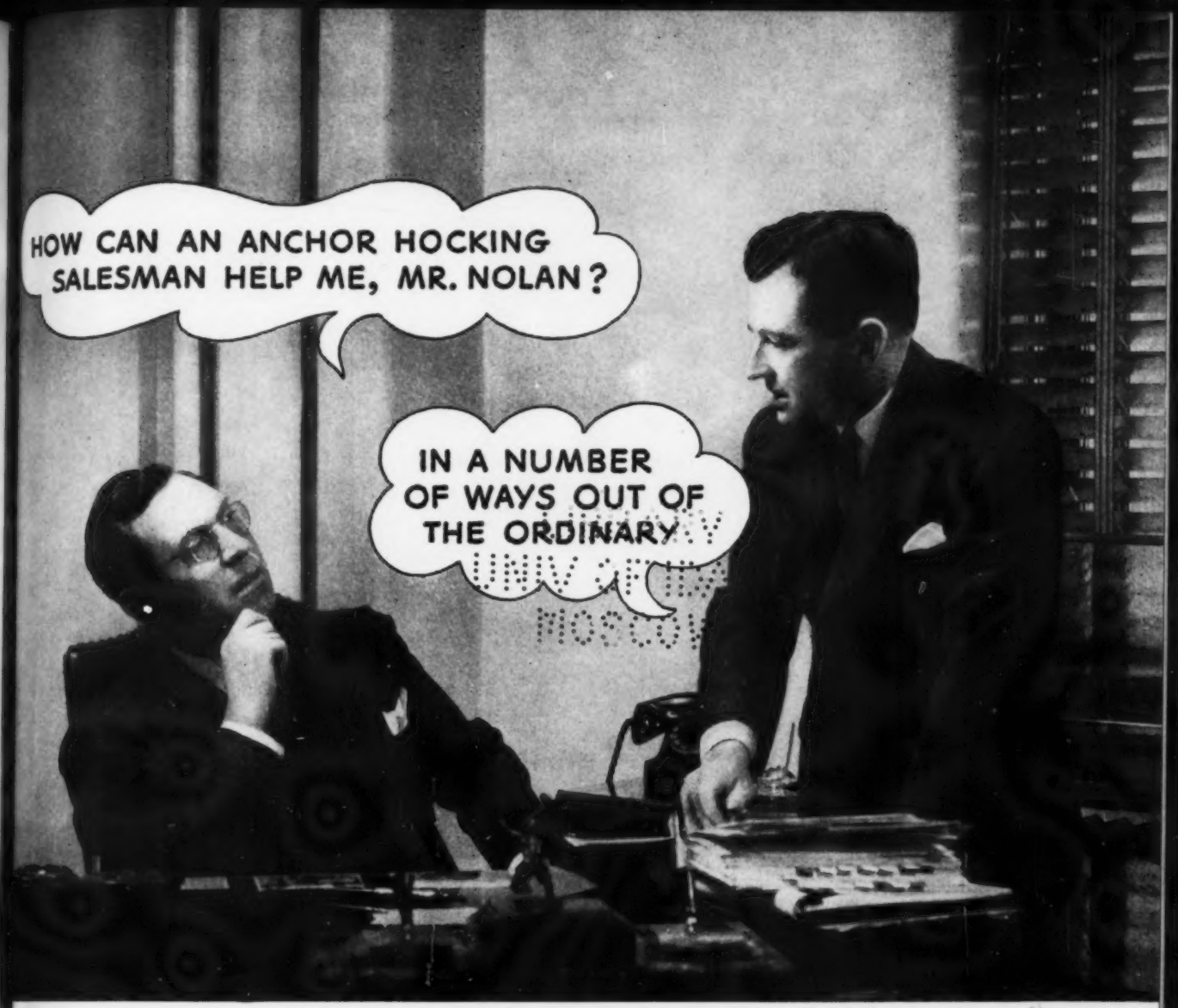

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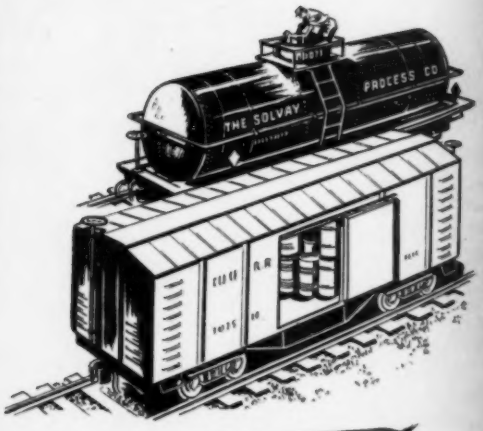

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BUT DON'T ASSUME TOO MUCH!

Recent events are leading everyone to visualize the end of the war, though with varying degrees of optimism. It probably isn't coming as soon as a lot of people have been hoping—but even when it does come it would be a mistake to assume it will be the end of the supply difficulty on pyrethrum and rotenone. Military requirements for pyrethrum will continue heavy as long as we have troops in tropical areas, and post-war rehabilitation and disease control will require perhaps even larger amounts than are now being used. Any possible surplus during the next nine months will be badly needed by agriculture.

Rotenone supplies for 1944 are reasonably adequate, though far from ample. At best we shall have rotenone insecticides for most of the important food crops for which they are either essential or desirable, but there will be no surplus for less essential needs.

Manufacturers of household insecticides must plan on another season of getting along as best they can with substitutes.

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of finest quality

VERY HIGH GLOSS . MINIMUM SLIP . WATERPROOF

▣ SUPER-KOTE is still made the pre-war way, — no congo gums, — no synthetics, — plenty of carnauba wax. Its tough durability will stand up under extremely heavy traffic.

▣ HERE'S OUR STORY . . . we have been making this fine wax for discriminating customers who were willing to pay a little more for an unusual product. Recently, we have been selling more SUPER-KOTE than ever. It seems that lots of people are tired of paying for wax and getting products loaded with rosin, cheap gums and synthetics. Today, they prefer to pay a little more for a real quality product.

▣ SUPER-KOTE has been ***really tested,*** — not by smell or feel, — not on a piece of glass or in a tin dish, — but under actual traffic conditions which includes mopping and washing. One of the largest utility companies in the world tested SUPER-KOTE for six months against nationally known brands. Result, — they ordered SUPER-KOTE and re-ordered. They recognize the labor-saving qualities of SUPER-KOTE, — fewer applications due to greater durability, — greatly reduced floor maintenance costs.

▣ We are self-polishing wax specialists, — no paste wax, — no liquid prepared wax. **This speaks for itself.**

▣ SUPER-KOTE costs $1.00 per gallon in drums or fives, F.O.B. New York. Try 5 or 10 gallons on a money back basis. We also supply other good waxes as low as 65 cents.

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DON'T FORGET—when you attend the National Association of Insecticide and Disinfectant Manufacturers Convention at the Hotel New Yorker, New York City, December 6th and 7th, be sure to drop in and talk with us about your Base Oil troubles. Perhaps we can help you. We will be glad to discuss specifications. availability and prices on the products listed below.

Shell Aromatic Solvents
TS28 Solvent
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Shell Cresylic Acid
Grade 4020A
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Tear out this list of Shell Products now —put it in your wallet as a reminder.

Shell Base Oils for Insecticides

Dispersol
Regular Base #1
#40 Base Oil

SHELL

Bac-trol

"Aristocrat of Germicides"

by

Baird & McGuire, Inc.

of St. Louis, Mo., and Holbrook, Mass.

SANITARY PRODUCTS

Official Publication, Nat'l. Assn. of Insecticide & Disinfectant Manufacturers

WITH the exception of pyrethrum, the outlook for insecticide raw materials for 1944, both household and agricultural, shows a general improvement. As a result of the efforts of the War Food Administration and other government departments in South America,—actually by waving some good American money under the noses of producers,—supplies of rotenone-bearing roots for the United States next year will probably be four or five times as great as in 1943. Manufacturers of synthetic insecticide bases, notably the organic thiocyanates, are reported prepared to take care of an even larger demand than the record-breaking figures of this year. The supply and the demand for white arsenic and the various arsenical insecticides made from it will probably reach an all-time high in 1944.

Pyrethrum, the exception in the improved outlook, will probably show a reduced available tonnage in 1944, a drop from this year's figures resulting from crop and labor conditions in East Africa. Such part of the pyrethrum crop as is allocated to the American market will all go into the manufacture of insecticides for our armed forces, both aerosols and sprays. It is quite definite that outside of a very small amount of low-grade material which may be used in agriculture, none will be available for civilian uses. Household insect sprays will of necessity be dependent altogether on synthetic toxicants in 1944.

All-told, it appears that there will be enough insecticides of one kind or another to take care of agriculture, foodstuffs, and sanitary protection during 1944. To the chemical and fertilizer division of the War Food Administration,—interested essentially in adequate protection for the food crops of the country,—must go the greatest part of the credit for its efforts of the past year to aid the insecticide industry in obtaining raw materials, household insecticides included, so that there will be enough to go around during 1944.

WARNING that manufacturers of insecticides, disinfectants and other sanitation products should begin now to study seriously the problems which they are going to face, or expect to face after the war, has been sounded by a leading manufacturer in this field. As he points out, the industry today may not know exactly what its major problems will be with the war's end, but it has an idea sufficient to guide some current thinking on the subject.

We feel that this manufacturer is altogether correct and that his warning for the industry to get busy is well timed. When we consider the tremendous production of materials for which a wholly peace-time market must be found after the war,—probably three or four times pre-war figures,—and what it may mean to every firm in the industry, we agree that the time to begin acting is right now.

LIVESTOCK INSECT CONTROL

A Study of insects which attack livestock and means for their practical control

By Dr. E. G. Thomssen and Dr. M. H. Doner

The J. R. Watkins Company

INSECTS and allied pests constitute a major economic problem to the animal raising industry of this country. It is a recognized fact that the results of all efforts by breeders, livestockmen and veterinarians to produce highly productive, thrifty and healthy stock are minimized if the various insect and parasitic enemies of livestock are not dealt with by adoption of an effective sanitation and control program. In some sections of the country insects determine the success or failure of stock-raising.

This situation had its inception when the types of the first breeds of livestock were originally brought into this country from Asia, India and China. Already infested with their own specific species of external and internal parasites, and then subjected to attacks by pests endemic to this country, the seriousness of the insect menace increased as livestock management advanced. Whenever animals are gathered together in numbers and confined in barns or enclosures of various sorts, their natural mode of living is somewhat altered and this condition gives insects increased opportunities to bring about their damage. The failure to take the precautions that limit the insects' chances for survival—elimination of breeding media for one thing—renders the insect problem more acute. Today the extent of the annual losses to the livestock industry in the United States by insects alone is prodigious, to wit: cattle grubs, $65,000,000; stable and horn flies, $10,000,000; screw-worms, $5,000,000; cattle and sheep scabies, $1,000,000; goat lice, $500,000. These figures are in addition to the millions lost to diseases and parasites that are directly or indirectly due to insects.

Common Flying Insects That Attack Livestock

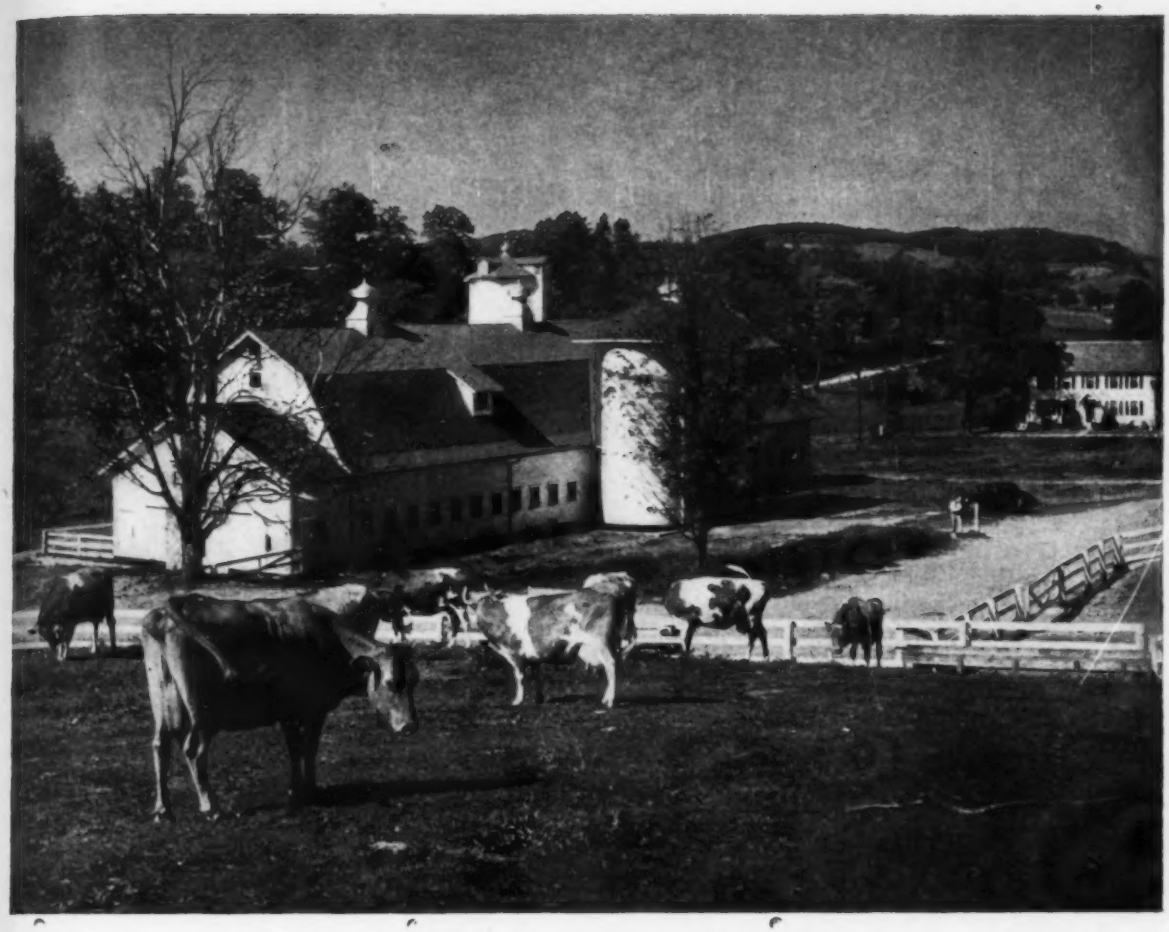
1. Stablefly or "Dog Fly" (*Stomoxys calcitrans* L.).
2. Horn Fly (*Siphona irritans* L.).
3. Mosquitoes (various species of *Aedes, Culex, Anopheles, Theobaldia*).
4. Houseflies (*Musca domestica* L.).
5. Horseflies or Gadflies, Deerflies, Greenheads (various species of *Tabanus, Chrysops, Haematopata*).
6. Horse Botfly (*Gasterophilus intestinalis* DeG.).
7. Nose Botfly (*Gasterophilus hemorrhoidalis* L.).
8. Throat Botfly (*Gasterophilus nasalis* L.).
9. Warble Flies (*Hypoderma lineatum* DeVill.) and (*H. bovis* DeG.).
10. Sheep Botfly (*Oestris ovis* L.).
11. Primary Screwworm (*Cochliomyia americana* C. & P.).
12. Secondary or Southern Screwworm (*C. macellaria* F.).
13. Black Blowfly (*Phormia regina* Meig.).
14. Bluebottle Fly (*Calliphora vomitoria* L.).
15. Greenbottle Flies (*Lucilla sericata* Meig. and *L. caesar* L.).
16. Flesh Flies (*Sarcophaga* spp.).
17. Black Flies (*Simuliidae*).
18. Punkies (*Culicioides* spp.).
19. Snipe Flies (*Symphoromyia* spp.).
20. Deer Louse Fly (*Lipoptena depressa* Say.).

How Insects Affect Livestock

THE various effects of insects on livestock and the livestock industry may be classified as follows:

1. Effect on the Animal:

A. *Irritation Due to Adult Insect Feeding or Egg-Laying.* — The penetration through the skin of the sucking apparatus of flies and mosquitoes, along with the irritating effects resulting from the injection into the tissues of blood anti-coagulating substances is distressingly painful. The loss of blood is significant. Bruce estimates that the loss of blood from a herd of 500 cattle from horn flies (averaging 4,000 flies per animal) amounts to about 7 quarts a day, or 312 gallons a year. According to Dyar and Knob 500 mosquitoes consume 23.92 cc. or 0.50 pints of blood daily from one animal. In the case of the Stable Fly, blood continues to ooze from the wounds even after the flies have ceased feeding. The feeding of mange mites that burrow in the skin sets up an intense itching that is a constant drain on the vitality of the animal. Animals subjected more or less to constant annoyance and worry of insects are unthrifty, which is reflected in loss of condition, increased suscepti-



Effective insect control is an extremely important factor in the breeding of healthy cattle. Cattle plagued by insects lose weight and energy, and their market value, milk production, etc., is lowered appreciably.

bility to disease germs, impaired efficiency and loss of energy. In the field, animals plagued by flying insects cannot graze normally, hence do not get sufficient food for maximum growth. This results in decrease in weight, in milk production and in market value.

Botflies harass horses to the extent of causing extreme restlessness and excitation which often results in runaways and serious accidents. The impact of botflies against the noses and lips of horses and mules frequently causes them to rub the parts on fence posts and various other objects, resulting in bleeding and injury.

B. *Irritation of Larvae Infestations.*—The perforation of the wall of the stomach of horses and mules by botfly larvae impairs food digestion and brings about a rough-haired, unthrifty appearance attended by weakness and lack of endurance.

The migration of warble grubs through the tissues of cattle certainly is irritating. The grubs contain a poisonous substance which results in an anaphylactic shock if the grubs are broken which occasionally happens. Death of the animals may result.

Screwworms are capable of destroying entire herds of cattle, hogs, sheep and goats. Screwworm flies, which normally deposit their eggs in dead animals, are attracted to any open wound, indeed, even the bloody smears of tick bites. Barbed wire scratches and surgical wounds, as from dehorning, castrating, marking, branding and the navel of new-born calves are common sources of trouble. Other cuts also become infested. For example, forty-eight per cent of myiasis or lesions due to perforation of tissues in goats and 73 percent in kids is due to shearing cuts; 63 percent in calves is due to wounds acquired from birth (Parish).

The maggots, using the hooks in their mouths to tear tissues during feeding, set up an intense irritation which the animal vainly attempts to appease by scratching or licking. Already infested wounds continue to receive eggs from other flies and the myiasis becomes extensive, involving large areas of the body.

Every sheep raiser is familiar with the action of sheep when attacked by the Sheep Nasal Fly. In a vain endeavor to dislodge the fly from the nose, sheep strike their heads violently and strike the ground with their fore feet. The fly deposits living young around the nose and these make their way into the nasal passages and the frontal sinuses of the upper jawbone. The symptoms are similar to that of

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During the past five years LETHANE 384 SPECIAL has been used annually in millions of gallons of household and industrial sprays. It provides fast-killing sprays which are clear, non-staining, mild in odor and low in cost.

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For Agricultural Sprays and Dusts

LETHANE 60 is a powerful contact insecticide. This concentrate is successfully replacing a large portion of the rotenone and pyrethrum normally employed in agricultural sprays and dusts.

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a cold in the head—"snotty nose" as it is called by sheepmen. Affected animals sneeze frequently, breathe with difficulty and do not eat properly. Severe infestations result in convulsions and death.

C. *Disease*

1. General

a. Entomophobia—acute annoyance, as due to warble flies.

b. Dermatoses—scab, mange or itch mites.

c. Myiasis—maggot invasions of the skin, sinuses or stomach.

2. Specific

a. Equine Encephalomyelitis (sleeping sickness)—mosquitoes.

b. Anthrax—horseflies, deerflies.

c. Anaplasmosis of Cattle—ticks, horseflies, mosquitoes.

d. Cattle Tick Fever—ticks.

e. Mastitis—houseflies.

f. Tularemia of Sheep—ticks, certain deer flies.

g. Infectious Anemia or Swamp Fever of Horses—biting insects.

h. Tick Paralysis of Poultry—ticks.

i. Pigeon Malaria—pigeon fly.

j. Leucocytozoon blood disease of ducks—black flies, buffalo gnats.

k. Fowl Tuberculosis—ingestion of infected fly larvae.

l. Fowl Cholera—mites, houseflies.

m. Fowl Pox—mosquitoes.

n. Spirochetosis of Fowls—ticks, possibly mites.

2. *Effect on Animal By-Products:*

A. *Milk Production.*—Stableflies are directly responsible for lowered milk flow. In areas of high fly population, milk production may be lowered as much as 50 percent according to Bishopp and Laake. Hearle reports that practical dairymen in badly infested mosquito districts in Canada suffer drops in milk yields as high as 40 percent. Studies of MacCreary indicate that mosquitoes may be a contributing factor to a decline in milk production but that "over a period of time economic losses from this source are comparatively small." The same writer states that warble flies cause a 10-25 percent loss in yield in milk. The reports of high milk losses due to stable and horn flies are exaggerations according to Freeborn and Regan, who found that the milk loss from cows exposed to extremely heavy infestations of houseflies and horn flies was negligible and that caused by stableflies was slightly less than 10 percent. However, as Shaw and Atkeson pointed out, in the Freeborn and Regan tests, the cows were exposed to much higher fly population than would be expected under average field conditions and the high decrease in milk production is probably not typical of most field conditions.

B. *Meat and Egg Production.*—By interfering with feeding, insects cause unthriftiness and decrease in weight, which in the case of the stable-fly may amount to as much as 10 to 15 percent of the animal's weight (Bishopp and Laake). Cattle grubs may be so numerous in the back of a carcass as to necessitate extensive trimming with losses of as much "as 2 pounds of meat in the location of the most valuable cuts" (Hearle). Obviously, these are extreme cases but nevertheless they give some insight into the part played by insects in reducing meat yields.

Among the varied causes of reduced egg production among poultry, the case against insects, lice and mites is strong.

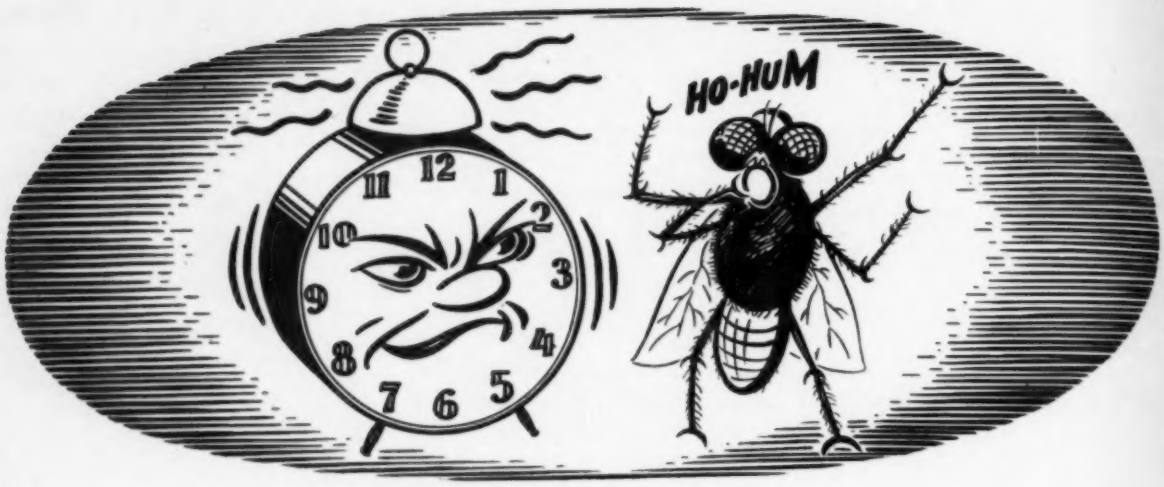
C. *Hides and Hair.*—Damage to hides by warble grubs is caused by the minute, newly-hatched larvae that eat their way through the tissues and by the breathing holes of the mature larvae in the back. Losses in Canada are estimated between $800,000 and $1,000,000 annually; in the U. S. at $5,000,000.

Wool is often injured by the various external parasites of sheep. Tick-infested animals "rub, scratch and bite at the fleece, causing it to become ragged" and consequently depreciate its value. By leading the animals to scratch and rub themselves, scab mites cause the wool to have a broken appearance and, in many cases, large areas of the body become denuded.

Control of Flying Insects

THE methods commonly used in controlling flying insects include: (1) repelling the winged insect from stock in field or barn; (2) destruction of the adults through the use of liquid contact sprays, poisoned baits or traps; (3) elimination of breeding sources; (4) destruction of the larvae in breeding material or as animal infestations. *Repellents*: Preventing the winged fly from feeding or from depositing eggs on stock has long been a popular method of controlling certain flying insects. In general, repellent sprays are the so-called "heavy oil" types of sprays which, depending upon the dose applied and the physiological effects of the oil on the animal's skin may affect stock more adversely than even heavy infestations of flies. In those states where death of stock has been known to occur because of insect plagues, repellents are clearly indicated. In other areas, it is felt by many authorities that the use of heavy oil sprays is not justified and many dairy farmers have departed from the practice. Their chief concern is not the effects of the flies on stock in the field but the irritation of the cows when confined during milking. They believe that flies are responsible for decreases in milk flow which, as often as not, may be due to improper feeding or to other conditions. Probably the desire to milk in comfort is as much the reason cows are sprayed as any.

The ordinary light mineral oil types of sprays are frequently used for this purpose but the newer, water-base emulsifiable products have not met with great success, probably due to the farmer's carelessness in improperly preparing the spray solution. He prefers to buy the finished product ready for use. The kerosene types of sprays can be depended upon to repel for limited periods of time under normal weather conditions, if a sufficient quantity of spray is applied to the animal. Unfortunately weather conditions are often hot and dry, the spray is improperly applied and complaints of poor repellency arise. Requirements



TIME—Flies

IT WILL SOON BE 1944

Due to transportation problems, irregular distribution of kerosene, bottles and closures, shortages in certain perfume raw materials, fly spray manufacturers are right now placing their orders for *1944 FLY SPRAY PERFUME* requirements.

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of a good cattle spray are that it must not taint milk, not burn the hide nor stain. The farmer also expects good knockdown, for when he sprays cows, he expects the flies to drop quickly, believing that he is contributing to fly control by destruction of the flies on the stock.

Ordinary repellents are of value chiefly for house, stable and horn flies but have very limited use for warble and bot flies which require special preparations. Treatment of horses with a mixture of pine tar (3¾ oz.), kerosene (1¼ oz.), laundry soap (1 oz.), powdered resin (1 oz.), hot water to make 14 oz. will repel horse bots for four days according to U. S. D. A. authorities. A similar mixture is recommended by the Utah Station: pulverized resin, 2 parts; soap shavings, 1 part; water, ½ part; kerosene, 1 part; oil of tar, 1 part; fish oil, 1 part and water, 3 parts. Certain materials have been recommended for application to the legs of cattle to repel warble flies but these are not satisfactory because the flies will deposit their eggs on unsprayed parts of the body.

The repellency of mixed and impregnated pyrethrum and derris dusts to stableflies was studied by Cory, Harns and Anderson with reference to an oil-base spray. The impregnated dusts gave better protection than the spray during the 3½ hour test period.

Destruction of Adult Flies: Fly sprays have limited value for checking infestations of house, stable and horn flies in dairy barns, chiefly because of the difficulty of atomizing enough spray to give a high kill of flies. The ordinary hand atomizers require too much time and effort for barn use. In addition, unless the doors and windows are closed to prevent escape of the fog, the efficiency of the spray is decreased and few farmers will take these necessary precautions of use. The electric sprayers overcome several of the difficulties encountered during application, but their use is not extensive.

Intelligent use of fly traps is of practical importance in the control of houseflies and certain blow flies that are attracted to baits. Tests conducted at the North Dakota Agricultural Experiment Station by W. G. Bruce, of the U. S. Department of Agriculture, are of interest. Using a standard government cone-type screen trap, baited with 2 pounds of beef liver and an overripe banana, the largest catch (for a ten-day period ending July 23) amounted to nearly 35 pints of flies. Of the total number of flies captured, 42.81 percent were houseflies (*Musca domestica* L.), 30.06 percent, the black blowfly (*Phormia* Meig.) the remaining 27.13 percent consisting essentially of bluebottle and greenbottle flies.

A trap for collecting horn flies from cattle as they pass through it has been devised by Bruce (1940). It is 7 feet in width, 6 feet high and 10 feet long. When an animal passes through the trap the flies are dislodged by two sets of curtains and when they attempt to escape are captured in three trapping elements located alongside the 33-inch wide passageway. According to the United States Department of Agriculture the trap is "under many circumstances, the most efficient, economical, and practical method of horn fly control."

Insect electrocuters are becoming increasingly popular as an adjunct in fly control. Many types have been devised for specific uses, the most common perhaps utilizing a screen door provided with a current conductor carrying 3500 to 4000 volts with low amperage. While restaurants have long made use of such devices, there is no question but what they offer real possibilities on the farm in doorways, windows, the milk house and outside trapping devices.

Elimination of Breeding Areas.—This offers one of the most practical means of preventing or curtailing infestations, but use by the farmer of this control method depends upon a knowledge of the habits of the various species involved and of chemicals that effectively kill the larvae. For instance, few farmers perhaps realize that the maggots of horseflies are aquatic and that the number of adult flies can be reduced by proper drainage of breeding places such as swamps and seepage areas along streams and wet areas of meadows. Running water is required by the maggots of Buffalo gnats and any possible way to quiet the water produces a condition unfavorable for breeding. The elimination of all stagnant water materially reduces mosquito populations. Since the larvae of stableflies breed in wet straw, mixtures of manure and straw, wet hay or grass, ensilage-straw mixtures, waste celery (Simons & Dove, 1942), fermenting tidal deposits (Ibid, 1941), care exercised in preventing an accumulation of these substances is recognized as the most important means of controlling the stablefly. The removal of manure to the field, where it should be spread thinly, aids in controlling horn flies.

Larvae in Manure and Drift Accumulations.—Although the elimination of breeding places automatically destroys any larvae present in the breeding medium, there are additional measures of control involving the use of special chemicals. That it is feasible to attempt destruction of maggots in manure piles appears obvious from the fact that 900,000 house fly larvae were recovered from a ton of manure that had been exposed only four days (Herms). Fay estimated one-half million flies per week were emerging from a 3-foot layer of heavy manure in a rick 250 feet long, 16 feet wide and 9 feet deep. Experiments have shown that such maggots, as well as those of the horn fly, can be controlled in such situations. Long recommended for this purpose has been a solution of 1 pound of borax in 6 gallons of water, applied with a watering can for destroying housefly larvae in the upper layers of manure accumulations. Subsequent experiments have revealed more toxic compounds. Thus the Oklahoma Station recommended a mixture of 90 percent superfine dusting sulfur and 10 percent air-floated paris green to give a 100 percent kill of housefly maggots, in addition to imparting a repellent effect on the adults. Other highly toxic compounds included sodium arsenite,

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Cattle sprays that cost less, yet offer extra fast knockdown, high kill, and longer lasting repellency can be produced with Thanite, the new 100% active toxic agent. Conclusive tests conducted under actual field conditions for the past three years at Kansas State Agricultural College prove Thanite gives better results than any other material tested.

Tests showed Thanite offers *greater killing power* at greater dilutions than any of the other toxic agents tested. While ordinary sprays lost repellency in one hour, Thanite sprays held *measurable repellency* up to 8 hours! Furthermore, the tests reveal that Thanite sprays have quick and *lasting knockdown*, are absolutely safe to animals, and offer low residual odor. These and other results are reported more thoroughly in a new Thanite booklet to be published soon. Write today reserving your free copy.

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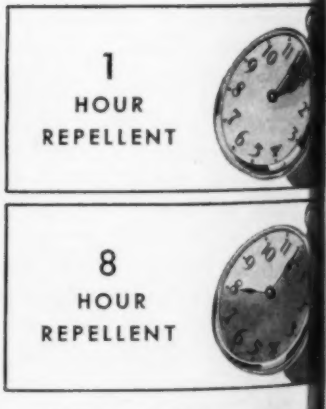
SAFE TO ANIMALS. Three years of spray exposures on hundreds of animals, as well as patch tests on humans, show Thanite sprays caused no organic damage.



LONGER LASTING REPELLENCY Sp... taining only 3% Thanite showed good repe... as high as *eight hours!* Compare this with t... you are getting with your present formula...

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NEW TOXIC AGENT

sodium arsenate, white arsenic, methyl thiocyanate, mercuric chloride, copper arsenate, ethylene dichloride and ethylene chlorohydrin. Bruce reported that 4 milligrams of phenothiazine for each 100 grams of droppings killed hornfly larvae.

The utilization of high temperatures for killing housefly larvae in manure piles was utilized by Fay at the Illinois Station. When manure was placed in specially-constructed ricks and covered with standard 60-lb. roofing paper, the temperature of the manure raised to 120° F. and all stages of the housefly in the manure were killed. It was concluded by Fay that this control "is practical as the cost of materials is low, the time required for the necessary operations is short and no technical knowledge is required to carry it out."

Stablefly eggs, larvae and pupae occurring in fermenting tidal drifts which are sources of heavy stablefly populations in Florida, can be completely eradicated by the application of creosote in Diesel oil or a creosote-water emulsion (Simmons and Dove, 1942b).

Medication of Cattle.—It is possible to administer certain chemicals orally to cattle which render the droppings unsuitable for the development of hornfly larvae but this method has not reached the practical stage. Effective materials include rotenone (0.4 gram per 100 lbs. of body weight), zinc oxide (1.5 grams per 100 lbs. of body weight) and phenothiazine (22 milligrams per kilogram of body weight).

Maggot Traps.—When housefly maggots complete their growth in manure piles they migrate to soil to pupate. To take advantage of this habit as a measure of control, manure should be placed on a slightly tipped concrete platform surrounded by a level concrete trough containing liquid manure or water. Migrating larvae drop into the trough and perish.

Control of Animal Infestations

Warble Grubs.—The oft-recommended procedure of extracting the grubs by the hand is applicable only to small herds and must be done carefully to avoid crushing the grub. This method, along with the following chemical methods of control is effective only after the grubs have perforated the hide for their oxygen supply. For large herds rotenone preparations consisting of 12 ounces of cubé or derris powder and 6 ounces of wettable sulfur per gallon of water make a very effective wash for application to the backs of cattle. If preferred, dust of equal parts of cubé or derris and wettable sulfur can be used. Injection of benzol into the grub holes is also satisfactory.

There has been considerable speculation regarding the efficiency of commercial cattle fly sprays in this direction. Many farmers believe that the daily spraying of the backs of cattle during the grub season results in a satisfactory measure of control. since the larvae breathe through openings on the rear of the body that are placed in juxtaposition with the opening in the skin, it is conceivable that oil sprays, properly applied, might result in a kill. To our knowledge, no specific data has been published on the subject.

Horse Bots.—Destruction and expulsion of bots is best accomplished by the administration of carbon bisulfide capsules (six drams per 1000 pound horse). An 18 to 24 hour preliminary fasting period is advisable. Since results are dependent upon such factors as time of treatment, condition of the animal, and proper administration of the capsule, the services of a qualified veterinarian should be sought.

Sheep Nasal Fly.—Attempts to kill the larvae after they have reached the sinuses is of little or no avail but it is reported by Corbett (see U. S. D. A. Yearbook) that young larvae in the nasal cavities can be killed by the forceful injection of a 3 per cent solution of saponified cresol solution. This insect is best controlled by preventive methods already discussed.

Screwworms.—A control campaign for screwworms involves (1) destruction of the larvae in the tissues of infested stock, (2) destruction of the carcass and (3) destruction of larvae and pupae in the soil. The first is accomplished by placing a pad of cotton or cloth, soaked with benzol, over the wound for 5 to 10 minutes and then, after removing the dead maggots, cleaning the wound and locating any additional maggots and killing them with benzol-soaked cotton plugs. After treatment, pine tar oil is applied over the area to prevent egg-laying by flies. Superior to pine tar is diphenylamine which not only acts as a repellent but kills young larvae as well. This chemical in conjunction with benzol, turkey red oil and lampblack is generally used as a repellent. In the case of sheep, Knipling recommended the shearing of wool from the infested area. In severe infestations the animal usually seeks a secluded spot to die. Such animals should be burned to destroy larvae present and to prevent deposition of eggs by other blowflies. Deonier (1940) showed that the temperature of infested carcasses is increased as much as 70° F. above that of the atmosphere and that this temperature increase "enables the larvae to continue to develop and the species to survive periods when weather conditions are unfavorable to adult activity." Immediately after death the larvae leave the carcass and by the end of 48 hours practically all had left the host. Ninety percent larvae were found by Travis, Knipling and Brody to migrate not more than 18 inches from the point where they drop from the carcass, pupation occurring approximately one half-inch below the surface. Such larvae and pupae can be killed by application to the soil of 1 ounce of sodium cyanide is ½ to 2 gallons of water, carbon disulfide emulsion or the heating of the soil with a gasoline or kerosene burner.

(To Be Concluded)

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(Turn to Page 117)

U.S.D.A. SET-UP FO

Experimental powder is dusted on a suit of heavy underwear for actual field test. U.S.D.A. photos by Knell.

Test specimens are applied to a after which dusted sleeve will drawn up over the lice and

Lice must be fed on human blood. Here an entomologist removes small squares of cloth carrying the test insects from the body of a volunteer.

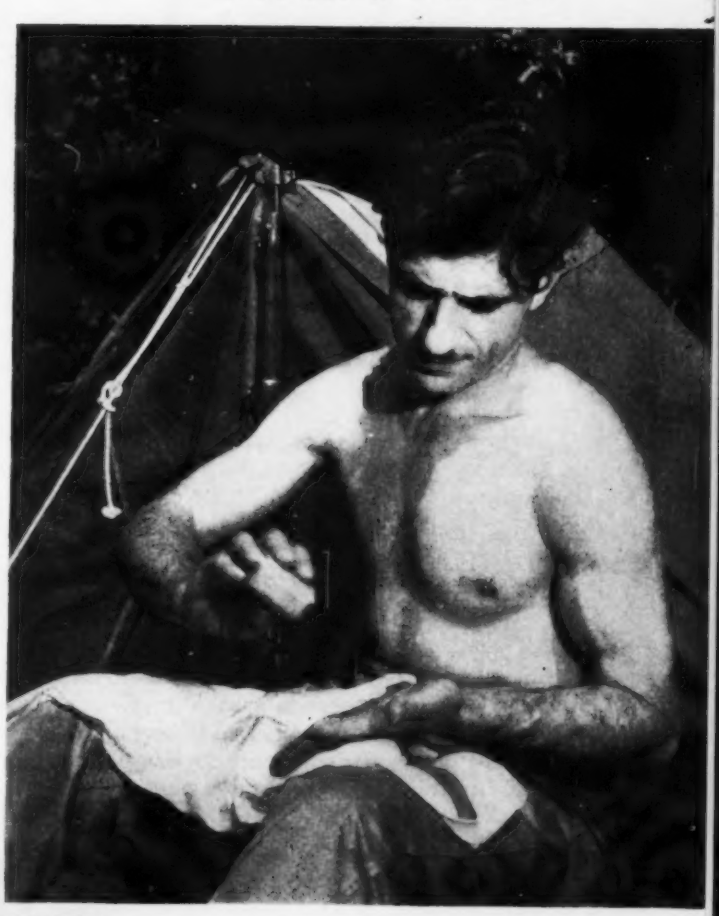
UP FOR TESTING ARMY LOUSE POWDER

THE new type louse powder now being supplied to American troops for field use is based on D.D.T. or dichloro-diphenyl-trichloroethane as the active ingredient. The powder consists of 10 per cent of this dyestuffs intermediate with ninety per cent of an inert pyrophyllite. An Army specification (GNB-A) covers requirements for the active ingredient. Development and procurement of the new powder is under the direction of the Surgeon General's Office of the Army.

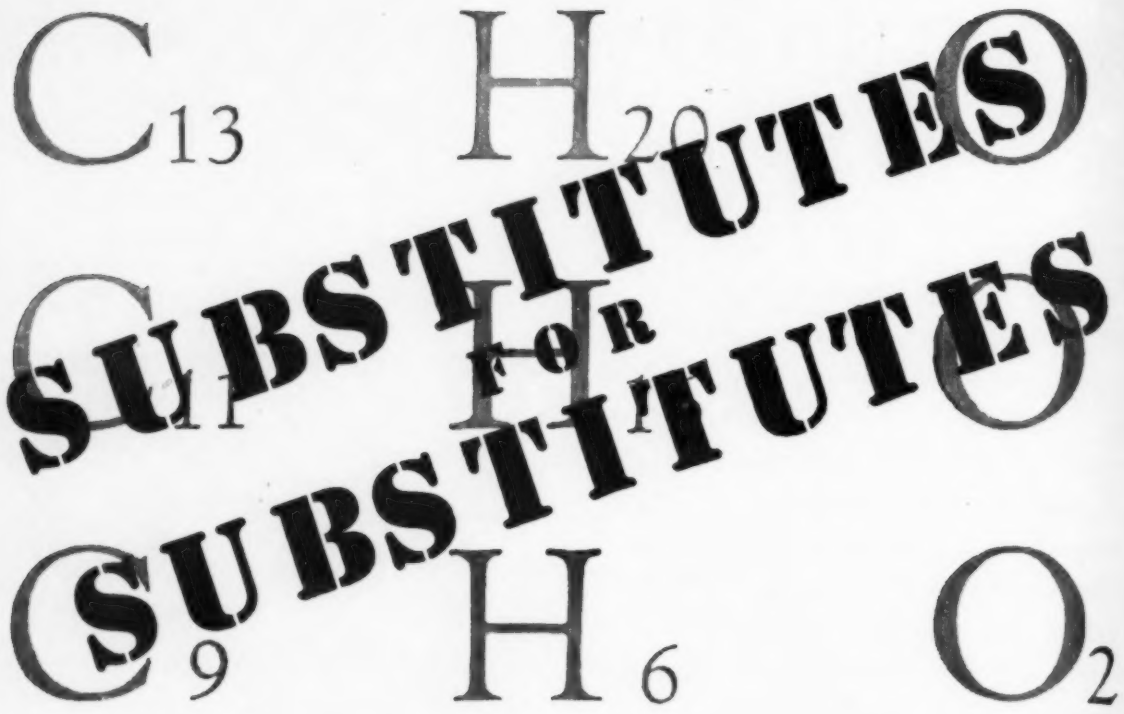
The Army formerly used a louse powder which had pyrethrum as its active ingredient. Approximately eight or ten million two-ounce cans of this product were purchased by the Army early in the War and some of this found use in the African campaign. The Surgeon General's Office has indicated that it changed to the new formula because of the acute shortage of pyrethrum.

The accompanying pictures show how entomologists of the U. S. Department of Agriculture ran the tests that led to development of the new formula.

A soldier in the field dusts his undershirt before turning in for the night. A can of the louse powder is issued to each soldier for use in the field.



After 24 hours exposure the treated underwear sleeves and legs are removed, and the number of live and dead lice counted and tabulated.



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THE INSECTICIDE OUTLOOK

The possibilities of supply and requirements in 1944 for rotenone, pyrethrum, thiocyanates, arsenicals and other raw materials

AS far as 1944 insecticide materials are concerned, the outlook for rotenone-bearing materials is much brighter. The outlook for pyrethrum supplies continues dark, in fact, somewhat darker than heretofore. In the case of nicotine and its derivatives, the sharply increased production of 1943 will probably be repeated in 1944. The production of arsenic and arsenical insecticide materials in 1944 will equal and probably exceed the output for 1943 although present rate of production is quite close to the maximum limit of facilities. Because of the high rate of operations of the phosphate industry, an increase in the production of silicofluorides is definitely possible in 1944. An even further increase in output of various synthetic chemical insecticides, particularly the organic thiocyanates, which have found such wide use in household and stock sprays and also an expanded use in agricultural insecticides during the past year, is likely in 1944. The possibility that the new D.D.T., generally termed dichlorodiphenyl-trichloroethane (2,2-bis-parachlorophenyl-1,1,1-trichloroethane), and which has found application in Army and Navy louse powder this year, may see much wider use in household and agricultural insecticides is noted.

Throughout 1943, the efforts of the Chemicals and Fertilizers Branch of the War Food Administration to increase the supply of all insecticide materials so that ample stocks will be available for use of the armed forces, agriculture, in general food protection and in the protection of the public health have been unusually successful, probably far more successful than was anticipated by the insecticide industry and consumers at the beginning of the year. W.F.A., showing a close knowledge of the entire insecticide picture of the nation, quite evidently left no stone unturned to aid in boosting the output of every conceivable type of insecticide material. Early in the year, W.F.A. promised agriculture, the food processing industries, public health officials, and the insecticide industry that the country would not be without raw materials for adequate insect control. Although there has been much shifting around in types of materials used,—pyrethrum being practically out of the civilian picture and rotenone stocks drastically reduced,—the promise to date has been fulfilled. The general outlook for 1944 is that supplies, excepting pyrethrum, will be as good, if not better, than during 1943.

THE darkest spot in the insecticide picture is the pyrethrum outlook. Both weather and labor conditions in Kenya and other parts of East Africa point to a reduced crop. The total 1944 production will probably fall under 10,000,000 pounds which is somewhat less than 1943 figures, and this in spite of a much higher price and higher wages paid to labor in Africa. Of this, less than 5,000,000 pounds will be allocated to the United States if the present basis is maintained. All new crop pyrethrum will go to the production of aerosol insecticides and sprays for the armed forces of Britain and the United States and probably none will be available for any other purpose. Some limited quantities of low-test flowers may find their way into specialized agricultural needs, but these will not be anything like the quantity which is normally required for these needs. The minimum figure of requirements of pyrethrum for necessary agricultural uses for 1944 has been placed at 1,300,000 pounds, but it is believed certain that this will not be met.

As a substitute for pyrethrum for certain agricultural uses, some work has been done on exhausted pyrethrum residues fortified with organic thiocyanates or other insecticidal agent. A wider use of these dusts may be seen in 1944 although a fair tonnage of this general type of impregnated residue has been consumed thus far in 1943. For use against crawling insects such as roaches, ants, silverfish, etc. under suitable conditions, mixtures of exhausted pyrethrum with some fifty per cent of sodium fluoride or sodium silicofluoride, and in some cases with added talc or other inert dust, have been receiving some attention. (Total normal use of pyrethrum in the United States per annum prior to 1942 was about 13,000,000 pounds.)

MOSTLY as a result of efforts originating with the War Food Administration, the outlook for rotenone supplies is much improved. Chiefly by guaranteeing a satisfactory and higher price through various governmental agencies in South America, production of cube, timbo, et al has been considerably stimulated and the crop outlook is much better. Peru, for example, where cube plantings in 1942 were 3,000 acres, has over 4,000 acres under production this year. In view of the improved shipping facilities from South America during recent months, it is believed that this will mean an equivalent increase in shipments to the United States.

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All told, the outlook today points to total imports of rotenone roots in one form or another from South America in 1944 which may reach 5,000,000 pounds. This compares with a figure of about 1,000,000 pounds actually reaching the United States thus far in 1943. The additional rotenone insecticides, however, will go to a great extent to take up the slack resulting from lack of pyrethrum for agricultural uses in 1944. It is estimated that from 4,000,000 to 4,500,000 pounds will be available for agriculture next year for insect control on a much wider variety of crops than were permitted this year under the original rotenone order, FPO-13.

A new list of probable permitted uses for rotenone on crops has been made up by the War Food Administration, use on victory gardens and home fruit crops still being permitted also. Rotenone may continue to be used against cattle grub, cattle lice, and sheep tick on lambs. The amount of rotenone for various uses will be restricted in accordance with the total supply actually available. About 1,000,000 pounds of rotenone dust of five per cent basis will be available for the manufacture of small package garden insecticides. These small-package products will be limited to an actual rotenone content of 0.5 per cent in the finished powders, making a total of 10,000,000 pounds. Dusts for use on commercial crops where a certificate of use is required may contain up to 0.75 per cent rotenone.

NEEDS of arsenic for insecticidal uses in 1944 are stated to be very close to the maximum potential total production of the country, allowing very little for technical non-insecticidal purposes for which some arsenic is required. From such figures as are available, the total of all arsenicals which will likely be needed in 1944 and which may be available from the present outlook is about 150,000,000 pounds. This includes lead and calcium arsenates, Paris green, sodium arsenite and other lesser arsenicals. Of this about 130,000,000 pounds would be current production and the balance carry over from 1943, the latter mostly calcium arsenate. Where the output of lead arsenate in 1943 was estimated at 65,000,000 pounds, the requirement for 1944 is given as 75,000,000 pounds. Production plus carry-over from 1943 of calcium arsenate is given for 1944 as 85,000,000 pounds. This 1944 production program would require something in excess of 30,000 tons of white arsenic.

The bulk of lead arsenate for 1944, about 70 per cent, will go for the protection of commercial fruit crops, mostly apples. The balance is to be used on miscellaneous garden crops, in nurseries, and on ornamental foliage. About 73 per cent of the calcium arsenate will be used on cotton, based on past figures, with potatoes and tomatoes accounting for another 23 per cent.

PRACTICALLY all the oil-base spray now used for the control of household insects, as well as stock sprays and special sprays for mill, dairy and warehouse insect control are based on synthetic toxicants in place of pyrethrum formerly used. The organic thiocyanates make up the bulk of these synthetic insecticide raw materials. It is believed that the total quantity of insect sprays produced from thiocyanates this year chiefly for protection of farm animals, food processing and storage facilities and general sanitation will amount to a figure close to 50,000,000 gallons. This is the civilian use figure and does not include sprays for the armed forces or other government departments. The W.F.A. estimates the 1943 figure lower than this and gives 50,000,000 gallons as its 1944 estimate. Some factors in the industry place the 1944 potential at 60,000,000 gallons which includes general, stock and mill sprays. As a substitute for pyrethrum and rotenone dusts for both household and agricultural purposes, the organic thiocyanates have been the subject of much research as ingredients of insecticide dusts. Predictions are that eventually a large tonnage of the thiocyanates will find use in the form of agricultural dusts and will offer very keen competition to pyrethrum and rotenone in the postwar markets.

Promises that D.D.T. (tradename, Gesarol, owned by Geigy & Co., New York), the new insecticide material which has attracted so much attention in recent months, particularly as the active ingredient of louse powder for our armed forces, may find far more expanded use in general household insecticides, agricultural dusts and the like have been heard. It is also mentioned as a very effective mosquito larvacide. Investigations on its general toxicity to warm-blooded animals have been under way by the Department of Agriculture for some months. Reports thus far indicate that it is perfectly safe for all insecticide purposes including household sprays, although other toxicological reports are not so favorable. Further work is being carried on and the new material (new only in the U. S. as it was used for some years in moth control in Switzerland and Germany) may play a very important part as an insecticide raw material within the next year or two. If it is as effective as some reports indicate, it looms large as one of the most important post-war insecticide products and could offer very strong competition to pyrethrum, rotenone, the thiocyanates, and to some degree to the arsenicals in agriculture. It will probably not be too important in insecticide developments in 1944, however, as the bulk of present output is being taken and will be taken for the manufacture of louse powder for the armed forces.

A FURTHER increase in nicotine production in 1944 as an additional aid in replacing rotenone in agricultural insecticides is likely. As a result of close attention by W.F.A. and insecticide manufacturers, output on a basis of 40 per cent nicotine sulfate will probably run around 4,500,000 pounds for 1943, an increase of 75 per cent over the 1943 production. New uses for nicotine which show promise indicate the urgency of the need that production in 1944 equal or exceed the current year.

Production of natural cryolite for insecticidal uses will be expanded to about 12,000,000 pounds in 1944. Synthetic cryolites are expected to show a marked increase in 1944 over the 5,000,000 pound production of 1943. New uses for cryolites to re-

(*Turn to Page* 117)

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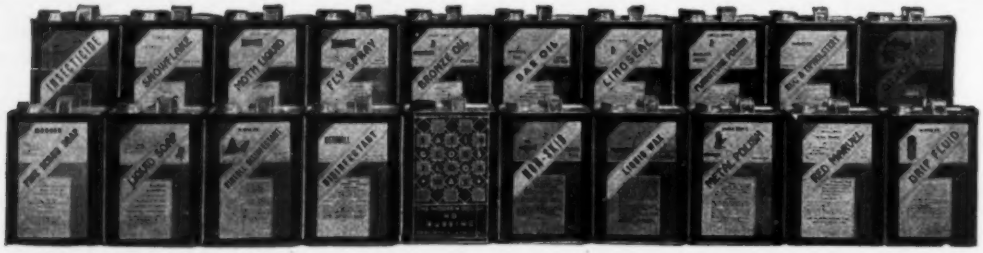

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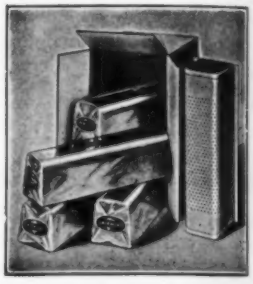

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PYRETHRUM ANALYSIS

Revision of the factor used in the mercury reduction method for determination of Pyrethrin I

By J. J. T. Graham and F. B. La Forge

*U. S. Department of Agriculture**

THE Mercury Reduction Method for the determination of Pyrethrin I proposed by Wilcoxon *(1)* † and modified by Holaday *(2)* has been adopted as an official method by the Association of Official Agricultural Chemists *(3)* and is widely used for the analysis of pyrethrum products.

Wilcoxon prepared a sample of chrysanthemum monocarboxylic acid which he found to be 99.8 per cent pure. This purity was established by alkali titration, microchemical combustion, and analysis of the silver salt of the acid. He treated solutions of this acid with Deniges' reagent as directed in the Seil *(4)* qualitative color test and precipitated the reduced mercury with sodium chloride. The mercurous chloride was filtered off and afterwards titrated with potassium iodate.

Wilcoxon found that three atoms of mercury (I) were equivalent to 1 mol. of chrysanthemum acid and hence of Pyrethrin I, and Jamieson *(5)* states that 1 mol. of iodate is equivalent to four atoms of mercury (I). Using these equivalents, Wilcoxon derived

$$\text{the factor 1 cc.} \frac{M}{100} KIO_3 = 4.4 \text{ mg.}$$

of Pyrethrin I. This factor has been generally accepted and so far as is known to the writers it has not, previous to this time, been redetermined.

During the past several years it has been known that the results obtained by its use were lower than those arrived at by titration of the separated acids. In view of this fact it was decided to reinvestigate the relation between the reduced mercury and Pyrethrin I in this determination.

Three samples (Nos. 1, 2, and 3) of chrysanthemum monocarboxylic acid were prepared at different times essentially as described by LaForge and Haller *(6)* from Pyrethrin I semicarbazone and one, No. 4, according to Wilcoxon's directions, from a concentrate containing about 60 per cent total pyrethrins. All of the preparations were liquid at ordinary temperatures but crystallized when cooled and seeded. All distilled between 111° and 115°, P = 1.5mm. N_d^{26} (Nos. 1 and 2) =1.4746, (No. 3, 1.4741, (No.4) 1.4747. Anal. calc. for $C_{10}H_{16}O_2$: C, 71.37, H, 9.58, M. W. 168. Found: (No. 1) C 71.06, H, 9.57, M. W. (titration) (No. 1) 169.2, (No. 4) 169.5, 168.2.

Preparation No. 3 was hydrogenated in ethanol solution with platinum oxide catalyst with the following results:

2.0 gms. of substance absorbed 264 cc. corrected to 0° and 760 mm; calculated for one mol. of hydrogen, 266 cc.

Portions of these samples of pure chrysanthemum monocarboxylic acid were weighed, dissolved in a slight excess of N alcoholic sodium hydroxide, and made to a volume of 100 cc. Aliquots of 10 cc. were transferred to beakers, 10 cc. of Deniges' reagent added and allowed to stand one hour. At the end of the reduction period, 20 cc. of alcohol was add.d followed by 3 cc. of saturated sodium chloride solution. The beaker was heated on the steam bath for about 10 minutes to flocculate the precipitate and the solution filtered through a 7 cm. S&S No. 589 paper. The precipitate was washed on the paper twice with hot alcohol and several times with hot chloroform. The filter and precipitate were transferred to glass-stoppered flasks, 50 cc. of hydrochloric acid (3 + 2) and 6 cc. of carbon tetrachloride were added and the mercurous chloride titrated with $\frac{M}{100}$ potassium iodate as described by Jamieson. *(5)*

Other determinations were carried out in the same way except that no alcohol or chloroform was used and the precipitate was washed with water. The volume during reduction was 20 cc. The results are given in Table 1.

The reduction of the mercury sulfate might take place according to the following equation:

---

* Mr. Graham is associated with the Insecticide Division, Livestock and Meats Branch, Food Distribution Administration; Dr. La Forge with the Division of Insecticide Investigations, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture, Beltsville, Md.

† Italic numbers in parentheses refer to literature cited, p. 113.

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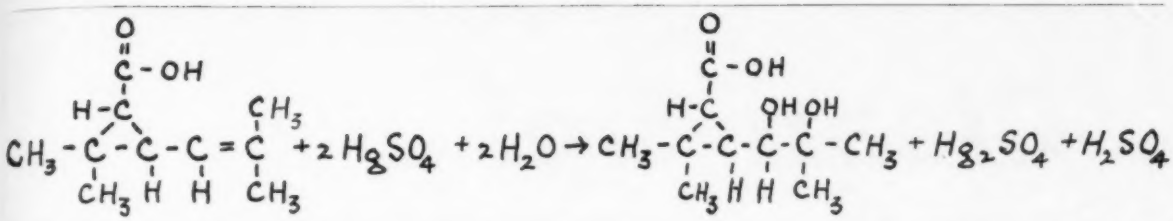

If this reaction took place, two atoms of mercury would be reduced by 1 mol. of chrysanthemum monocarboxylic acid, which would give the factor 1 cc. $\frac{M}{100}$ KIO_3 = 6.6 mg. of Pyrethrin I.

Wilcoxon, *(1)* under the conditions of his experiments, found that three atoms of mercury were reduced by 1 mol. of the chrysanthemum monocarboxylic acid used, and the factor 4.4 was deduced on that basis. However, it is not clear how the breaking of a double bond would result in the reduction of an odd number of atoms of mercury. Therefore, it is reasonable to assume that Wilcoxon's factor was an empirical one.

The work reported in this paper did not give a whole number for the atoms of reduced mercury, but rather the value 2.38, indicating that the reaction does not proceed in accordance with the equation shown. It does, however, reach a definite and reproducible equilibrium point.

Table 1 shows 19 closely agreeing results from the reduction of four samples of pure chrysanthemum monocarboxylic acid. By dividing the quantity of pure acid taken for reduction, expressed in terms of Pyrethrin I, by the number of cc. of $\frac{M}{100}$ KIO_3 used in the titration, we have derived the factor 1 cc. $\frac{M}{100}$ KIO_3 = 5.70 mgs. of Pyrethrin I.

We suggest that this value be adopted as the factor for use in this method. It has a standard error of ± 0.02 mgs./cc.

TABLE 1.—Analysis of 4 preparations of pure chrysanthemum monocarboxylic acid by the mercury reduction method showing the ratio Pyrethrin I/cc of $\frac{M}{100}$ KIO_3 solution.

Sample	Quantity taken: Chrys. acid	Quantity taken: Equiv. Pyr. I	$\frac{M}{100}$ KIO_3	Factor 1 cc. = 4.4 Mg.: Pyrethrin I	Factor 1 cc. = 4.4 Mg.: Recovery	Derived factor Pyrethrin I
	Mgs.	*Mgs.*	*Cc.*	*Mgs.*	*Pct.*	*Per Cc. Mgs.*
1	17.96	35.28	6.30*	27.72	78.6	5.60
			6.25*	27.50	77.9	5.64
			6.25*	27.50	77.9	5.64
			6.25*	27.50	77.9	5.64
2	17.24	33.86	5.85*	25.74	76.0	5.79
			5.88*	25.87	76.4	5.76
2	16.40	32.21	5.52*	24.29	75.4	5.84
			5.47*	24.07	74.7	5.89
			5.68	24.99	77.6	5.67
2	27.56	54.13	9.45	41.58	76.8	5.73
			9.45	41.58	76.8	5.73
			9.68	42.59	78.7	5.59
			9.40	41.36	76.4	5.76
3	15.40	30.25	5.36	23.58	78.0	5.64
			5.40	23.76	78.5	5.60
			5.30*	23.32	77.1	5.71
			5.23*	23.01	76.1	5.78
4	18.36	36.06	6.45	28.38	78.7	5.59
			6.35	27.94	77.5	5.68
					Av 77.21 ±0.26	Av 5.70 ±0.02

* Alcohol and chloroform used in determination of these results.

The results show, on the basis of the commonly used factor, a recovery of 77.2% ± 0.26% of the acid taken for analysis.

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Testing Insecticides

A laboratory apparatus and a procedure for testing the insecticidal value of aqueous spray suspensions are described. The spray is discharged vertically upward and the drops of spray fall back on the surface to be treated. This method gives a relatively uniform deposit of spray material and a number of excised leaves can be treated simultaneously. A cage for confining a number of larvae individually on an intact leaf is described. E. R. McGovran and E. L. Mayer. U. S. Dept. Agr., Bur. Entomol. Plant Quarantine *ET*-208, 5 pp., May, 1943.

Assay of New Germicides

The quaternary ammonium compounds which are now becoming increasingly useful as antiseptics and germicides are of such potency that solutions more concentrated than 1 to 500 are seldom used. These compounds are usually standardized on the basis of their phenol coefficient or actual bactericidal efficiency. However, a chemical assay method sufficiently simple for field use has been devised, and has proved of value not merely in the field but also as a laboratory control test.

A colorimetric method for the estimation of some germicidal quaternary compounds in dilute solution is, for practical purposes, specific in that inorganic alkalies and the comon primary, secondary, and tertiary amines do not interfere. Therefore an exten-

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sion of the general method has been suggested for the estimation of some colored sulfonic acid (anions) with quaternary ammonium cations. M. E. Auerbach. *Ind. Eng. Chem.*, Anal. Ed. 15, 492-3 (1943).

Wax Composition

Anhydrous colloidal wax compositions are manufactured from a crystalline ester wax of a monohydric alcohol and a fatty acid, both of high molecular weight. The wax, resembling carnauba wax, is melted and a petroleum distillate boiling between 300 and 600°F. is added. The wax is completely miscible with the distillate at temperatures above the melting point of the wax, but is relatively immiscible at ordinary temperatures. A mixture is prepared containing 1-5 per cent of the wax, which is then slowly cooled to atmospheric temperature, and passed through a colloid mill. J. B. Holtzclaw and J. E. Clemens, to Standard Oil Development Co. U. S. Patent No. 2,311,338.

Oils as Contact Insecticides

The penetration of oils into insect eggs was most rapid with eggs of the American roach, less rapid with eggs of the Colorado potato beetle, and still less rapid with eggs of the Mexican bean beetle. Petroleum oils of low viscosity penetrated more rapidly than those of higher viscosity. Glyceride oils having the same viscosity as some petroleum oils exhibited somewhat slower penetration. Below 25° C. increase in penetration time was not marked and occurred only with oils of higher viscosity. Eggs immersed in oils for prolonged periods collapsed through loss of water. R. L. Blickle. New Hampshire Agr. Expt. Sta., Tech. Bull. 79, 14 pp.

Textile Protection

Trichlorobenzyl phenyl ether or closely related compound is dissolved in acetone or alcohol as a mothproofing agent for textiles, and is mixed with salicylanilide as a fungicide, or with pyrethrum as an insecticide. A. H. Goddin and N. E. Searle, to Canadian Industries, Ltd. Canadian Patent No. 412,891.

Unbidden House Guests

By Hugo Hartnack, Tacoma, Wash. Hartnack Publishing Company. 558 p. 445 figs. 1943. $15.00.

Unbidden House Guests is a large, well-bound book with many excellent and unusual illustrations. The book consists of four parts. In Part I the author discusses such subjects as housepests, influence of the house on the housepest, spoorology (diagnostic) of housepests, damage by housepests, and exterminating methods.

The ecology and climate of the house in relationship to household pests are discussed at length, and this information is of considerable interest to the student of household pests. In the section on "spoorology" the text is concerned with identifying household pests through the proper interpretation of clues that the pests leave behind. The many fine illustrations of feces, damage, trails, etc., make this section worthwhile. The information on control is sketchy, and at times the approach is more philosophical than practical.

Part II concerns itself with bacteria, molds in the house, timber rot, fungus, and the relationship of household pests to plants and animals and *vice versa*.

Part III (112 p.) is devoted to protozoa, worms, snails, millipedes, spiders, mites, and several lower forms of animals. Here, as in Part II, the author shows a tendency to delve in great detail into zoological classification to the probable bewilderment of the average pest control operator.

Part IV (140 p.) considers such coldblooded and warmblooded animals as fish, snakes, birds, bats, rats and mice. The sections on birds, bats, rats and mice are detailed and well illustrated. The material on control is adequate.

The author has devoted much time and effort in compiling the facts in this book. Many of the pages contain useful and interesting information; however, the material that is of particular value to the pest control operator and economic entomologist is often obscured by the sheer weight of extraneous detail. The use of European common names for a number of familiar pests instead of common English names is also confusing.

Hartnack received his early training in hygiene, sanitation, and biology in Germany, and he is acquainted with source material that is usually not available to the investigator in this country. It is unfortunate that he did not list more of his German bibliography since this would have enhanced the value of the book to the entomologist.

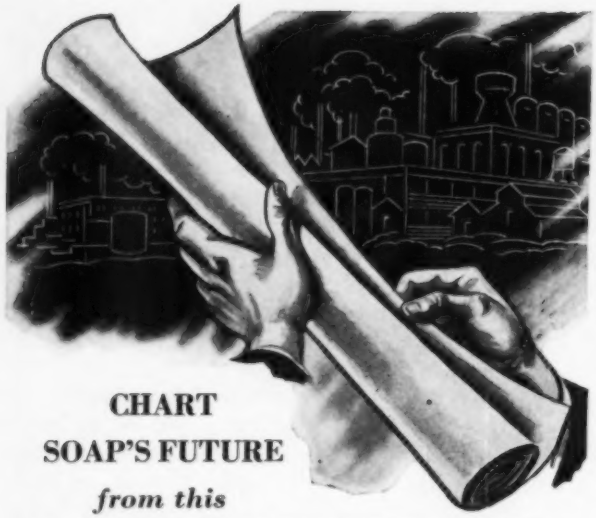
Pest Control in Armed Forces

The role played by the entomologist in the present war is discussed by Willard V. King, Lt. Col., Sanitary Corps, U. S. Army, in an article "Some Entomological Aspects of Troop Mobilization" which appeared in the August, 1943, issue of the *Journal of Economic Entomology*. He observes that in most wars the loss of military man power from disease far exceeds the loss of men in battle. He emphasizes the importance of insect control in preventing outbreaks of malaria, plague, typhus and yellow fever, and summarizes some of the work that the Sanitary Corps is doing along this line.

Report on Tobacco Research

Studying possibilities for development of commercially valuable by-products from low grade tobacco, chemists at the Kentucky Agricultural Experiment Station, Lexington, Ky., report results of interest in the soap, resin and insecticide fields. A progress report on the project, embodied in the Kentucky station's 54th annual report, refers briefly to the discoveries which resulted while testing the effectiveness of different solvents for extracting some constituents of tobacco. The solvents used, were ethyl ether, petroleum ether, Skellysolve "B," acetone, ethyl alcohol, methyl alcohol, benzene and carbon tetrachloride.

From the ether-soluble or fatty portion of the extract, soap was made. The unsaponifiable portion of the extract, (about 30 per cent of the total) was separated into two fractions by precipitation from the ether solution by addition of alcohol. The precipitate obtained was a white, waxy substance



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Marvels in the production of new substances by chemical methods, with their counterpart in special processing equipment are still necessarily in part a war secret. Many details that may be revealed however, including not a few bearing on post-war plans, will form a leading interest at this year's Exposition of Chemical Industries.

Important decisions regarding the post-war activities of manufacturers may be made as a result of this Exposition. Much of the information to be disclosed reflects either the creation of new industries and their products, or the conversion of existing plants to new uses — to help win the war now, to help rebuild the world after Victory has been won.

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and the residue remaining after the solution was evaporated had a dark brown color, but was more liquid than the residue before the separation was made. These two fractions would appear to have commercial possibilities in the resin and wax industries. Nicotine was extracted completely and recovered from the extract. Such nicotine can be used for making the pure alkaloid or making insecticide sprays, dips or nicotine bentonite.

—— • ——

Mosquito Larvicide

Extensive field tests against various mosquito larvae in irrigated regions, in overflow swales along the Columbia River, in semi-permanent ponds and roadside ditches, and in mountain meadows, usually showed 90-100 per cent mortality in 24 hours with sprays containing 1 part of Diesel oil with 4 per cent of emulsifier in 6-9 parts of water. The emulsifier may be a sulfated sperm oil such as "Nopco 1216," a phthalic glyceryl alkyd resin such as "B-1956," or an 18-carbon chain complex amine such as "Amine 230X." The emulsions were applied at the rate of 4 gallons per acre. In preliminary tests on salt-marsh mosquito larvae, emulsions made with "Nopco 1216" were not so effective as against fresh-water larvae. Emulsions made with the other emulsifying agents were not tried against salt-water larvae. E. F. Knipling, C. M. Gjullin and W. W. Yates. U. S. Dept. Agr., *Entomol. Plant Quarantine E-587,* April, 1943.

INSECTICIDE OUTLOOK

(*From Page* 109)

place some arsenic and rotenone on vegetable crops is noted and a material increase in consumption in this field is expected next year. Wider use of barium silicofluoride as a partial substitute for rotenone is also expected in 1944, as well as the use of sodium silicofluoride in place of sodium arsenite for use in poison baits for grasshopper control and for treatment of certain field crops. About 13,000,000 pounds more copper sulfate will be needed in 1944 than was used in 1943,—the figure for 1944 is given as in excess of 117,000,000 pounds.★★

Increase in Insect Resistance

One of the disturbing features of insect control that has attracted the attention of entomologists, and given them considerable concern, is the apparent increased resistance that may develop in some species of insects to insecticides that previously functioned as effective controls. This subject is discussed by H. J. Quayle, University of California Citrus Experiment Station, in the August 1943 issue of the *Journal of Economic Entomology,* p. 493-500. Mr. Quayle's article is in the form of a review of experimental evidence previously cited by various investigators of the subject. Experiments cited involve seven species of insects of widely different food habits which have all shown an increase in resistance to insecticides on continued exposure. The insecticides involved were varied types, including contact and stomach poisons, fumigants, a bait spray, and an insecticide incorporated in the medium in which one of the test insects lives.

—— • ——

Iodine in Water Sterilization

Iodine is more efficient as a sterilizing agent for water than chlorine, according to an article by A. Renshaw, published in *Lancet* 2, 237 (1943). Iodine dissolved in a dilute solution of potassium iodine, in a concentration of 1:20,000 gave complete sterilization of polluted water in 10 minutes. The water was infected by *B. coli, B. typhosus, B. paratyphosus, B. dysenteriae,* and *Vibr. cholerae.* Even when the water was relatively high in organic matter, similar results were obtained with the same low iodine concentration.

Use of the agent is suggested primarily for fighting troops, or possibly by civilians in case of bacterial warfare. The pale yellow color of water so treated could serve as an indication of sterility.

—— • ——

Grain Weevil Insecticides

Wet-ground clinker dust was found to be an effective insecticide against grain weevils. A dust to be effective should have a substantial proportion of particles less than 10 microns in size. When different materials were tried, it was found that the killing power increases with the angularity of the dust particles. The Chem. Age 48, 582-3 (1943).

—— • ——

Acid Disinfectant

Thiocyanic acid is combined with a fatty alcohol sulfate containing 10 or more carbon atoms in a strongly acid solution to give a disinfectant. E. Weidner. German Patent No. 723,744.

—— • ——

Insect Repellent

An insect repellent contains as its essential active ingredient a straight-chain aliphatic nitrile having 10-14 carbon atoms, for example, lauro nitrile. A. W. Ralston and J. P. Barrett, to Armour & Co. Canadian Patent No. 415,148.

LIVESTOCK INSECT CONTROL

(*From Page* 103)

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U.S.D.A. Yearbook, 1942.★★

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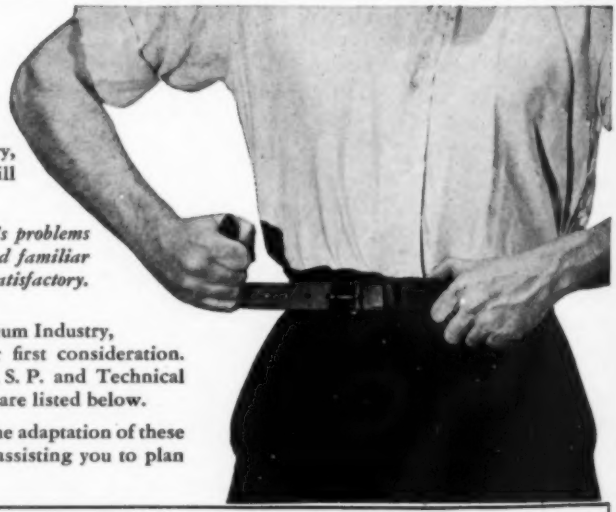

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NEWS

West Expand in Chicago

West Disinfecting Co. has expanded facilities of its Chicago branch by construction of an addition to the building they occupy at 2637 Cottage Grove Ave., said to cost approximately $12,000.

Link Rats and Polio

Chicago health authorities have asked the cooperation of pest exterminators in that city in an investigation covering the possibility that rats are carriers of the germ which has caused a widespread epidemic of infantile paralysis in that city. Exterminators located in areas where the incidence of the disease is heavy have been requested to collect live rats for examination in health department laboratories or to bring them in within twelve hours after death. More than a score of exterminators have volunteered their cooperation. The disease germ has already been identified as present in garbage dumps and in sewage which enters Lake Michigan from Indiana cities near Chicago. Following from this point it has been assumed that from the garbage the rats may possibly pass the germ to human beings. Work on this line of investigation was started early last month and nothing authoritative has yet been announced.

Campbell A.A.A.S. Editor

Dr. Frank Leslie Campbell, professor of Plant Entomology at Ohio State University, Columbus, O., was recently appointed to a newly created position: Director of Publications of the American Association for the Advancement of Science. The new office was created to increase the present administrative staff in an effort to cope with the expanded activities of the Association, and because Association publications are said to promise to increase greatly when the war is over. This is particularly true of symposia, five of which have been published since Pearl Harbor. A sixth is being bound and two more are on the way. Moreover, at the end of the war it will be necessary to publish a new "Summarized Proceedings" for the period since Jan. 1, 1940. In addition, the A.A.A.S. *Bulletin* and the *Scientific Monthly* are to be edited and published each month, totaling about 1,300 pages a year. Dr. Campbell has had 12 years of editorial experience and now becomes an executive officer of the Association.

Rotenone Products Co., Moves

Rotenone Products Co., agricultural sprays and insecticides, East Orange, N. J., recently moved from 46 North Munn Avenue to 110 Eaton Place.

Timbo Shipped By Air

Among other types of cargo being shipped by transatlantic air ferry service by Pan American Airways and American Export Lines was a recent shipment of timbo powder from the Amazon valley of South America. The quantity shipped was not revealed in the newspaper story telling of the shipment.

RESIDUAL TOXICITY OF DDT

Effective use has been made in Germany of the residual toxicity of "Gesarol" (now being marketed in the United States under the name "DDT") in the control of flies in stables. A report on test studies was published in *Anzeiger fur Schadlingskunde*, Vol. XIX, No. 1, and has been translated by Carlo Zeimet of the Bureou of Entomology and Plant Quarantine, U.S.D.A. Spraying of a 1% solution of "Gesarol" in stables was found to leave a highly toxic deposit on the stable walls which paralyzed flies subsequently lighting on the walls. The toxic effect is said to be retained for five or six weeks. A full translation of the report will be published in the December issue of *Soap and Sanitary Chemicals*.

Two New NAIDM Members

Two new active members have just joined the National Association of Insecticide and Disinfectant Manufacturers, Inc., New York. They are Onyx Oil & Chemical Co., 15 Exchange Pl., Jersey City, N. J. and Eradico Products Co., 3922 Joy Rd., Detroit.

New Petroleum Wax

Petroleum Specialties, Inc., New York, are introducing Pentawax D-835, the first product in a new series of micro-crystalline petroleum waxes which will be available in sizeable quantities, an announcement states. Micro-crystalline waxes are in enormous demand for essential military requirements. Pentawax will help to relieve the acute scarcity of these products.

T. F. Gowdy Co. Formed

A newly formed company, T. F. Gowdy Co., dealers in chemicals, oils, fats and waxes, 2 Broadway, New York, was announced recently. T. F. Gowdy, founder, was previously connected with Elbert & Co., New York. He has been affiliated with the oil and chemical industries for over a quarter of a century.

DCAT Holds Forum

"Cancellation of Government Contracts" and "Disposal of War Surpluses" were two topics discussed at an industry forum held under the auspices of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, Oct. 22, at the Waldorf-Astoria hotel. The meeting, which was presided over by Victor E. Williams of Monsanto Chemical Co's. New York office and chairman of the Section, was preceded by a luncheon.

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Recommended for linoleum, asphalt tile, composition flooring, varnished, sealed, shellacked or painted wood, marble, terrazzo, tile, rubber, and painted cement. Has many other important war-time uses . . . such as reducing friction on airplane wings and fuselages, protecting shell cases, etc. Priced right for profitable selling . . . write for full details and samples.

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NAIDM Program Plan For Meeting Dec. 6-7

JOHN N. CURLETT
of McCormick & Co., president of the National Association of Insecticide Manufacturers who meet in New York December 6 and 7.

L. A. APPLEY
vice-president of Vick Chemical Co. and executive director of the WMC who will address NAIDM members on the topic "Allocating Manpower."

PLANS for some of the highlights of the 30th annual meeting of the National Association of Insecticide & Disinfectant Manufacturers to be held at the Hotel New Yorker, New York, on December 6 and 7, have been announced by A. W. Morrison of the Socony-Vacuum Oil Co., chairman of the program committee. The two-day meeting will be built almost wholly around a discussion of problems associated with war-time production and distribution, according to Mr. Morrison. Supplying insecticides, disinfectants and other sanitation materials to the armed forces and other government departments, the constantly changing raw material picture in the light of scarcities, substitutes, and new developments, war-time manpower problems, training of personnel for greater output, packaging and container problems, and post-war planning are the subjects which will make up the greater part of the program.

Among the leading speakers at the meeting will be L. A. Appley, Deputy Chairman and Executive Director of the War Manpower Commission, Washington, on "Allocating Manpower," and Sterling W. Mudge, New York State District Director, T.W.I. Service, War Manpower Commission, on "Training within Industry for Greater Production." Dr. John L. Davis, well-known philosopher and humorist, will speak on sense and nonsense in government, business and industry. Mr. Appley will speak on Dec. 6 at the special group luncheon.

Four symposiums covering the important problems of insecticide raw materials, disinfectant materials, floor wax materials and the general package and container situation are scheduled on the program. Tentatively listed as discussion leaders for these symposiums are Dr. E. G. Thomssen of the J. R. Watkins Co., Winona, Minn.; Dr. G. A. Bowden of the A. S. Boyle Co., Jersey City; and Charles E. Smith of the Socony-Vacuum Oil Co., New York. Several speakers will be heard on each phase of the symposiums in addition to the discussion leaders. Leading committee members and officers who will report at the meeting include Dr. Emil Klarmann of Lehn & Fink Products Co., Bloomfield, N. J., A. E. Badertscher of McCormick & Co., Baltimore, Dr. R. B. Trusler of the Davies-Young Soap Co., Dayton, O., Friar Thompson of the Hercules Powder Co., Wilmington, and H. W. Hamilton of White Tar Division of the Koppers Co.

John N. Curlett of McCormick & Co., president of NAIDM, has announced a meeting of the Board of Governors to precede the regular meeting on Sunday evening, December 5. Regular business sessions will extend over two days, Dec. 6 and 7, with group luncheons each day and an informal dinner on the evening of December 7. Arrangements are in charge of John Powell of John Powell & Co., New York, H. W. Hamilton, secretary, and Charles Opitz of John Opitz, Inc., Long Island City. In view of present war-time conditions, the meetings will be open to all manufacturers and distributors in the insecticide, disinfectant and sanitary products industry.

Bri-Test Enlarge Quarters

Bri-Test Products Corp., manufacturers of floor waxes and polishes, disinfectants and cleaners, of 810-816 East 136th Street, Bronx, New York, have acquired the adjoining building of approximately 10,000 square feet.

Koonce Joins Innis Speiden

Innis, Speiden & Company, New York announce that Samuel D. Koonce, who received his Ph. D. in Physiological Chemistry from Ohio State University in June, has become associated with that company. Mr. Koonce will be located at the Boyce-Thompson Institute for Plant Research, Inc., Yonkers, N. Y. where he will conduct investigations on the application of "Larvacide" (chlorpicrin fumigant) and other substances to the production and protection of foodstuffs.

Frame Joins Continental Can

Stanley T. Frame has joined the sales development staff of Continental Can Co., as market analyst. He was previously associated with Swift & Co., in a similar capacity, and brings to his new connection more than ten years of specialized experience in that field.

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ROSIN — TALL OIL — PARAFFIN OIL — LINSEED OIL
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Ask Industry Approval for Standard Insecticide Packages

Table 1.—Retail Packages

Package Size	Exhibition No. in Limitation Order L-103	Overflow Capacity	Maximum Weight of Glass	Height	Maximum Outside Diam. of Body	G.C.A. 400 Finish Size	Packages per Shipping Case
Fluid Ozs.		Fluid Ozs.	Avoir. Ozs.	Inches	Inches	M.M.	
1 pt.	80-50	16-31/32	11	6-41/64 overall	2-63/64	28	24
1 qt.	80-75	33-53/64	17½	8-1/8 overall	3-47/64	28	12
	80-76	33-59/64	17¾	8-1/8 overall	3-47/64	33	
1 gal. bottle	80-96	135⅝	60	12-9/16 overall	5-63/64	38	4
1 gal. jug	51-98	136	48	9-3/8 bottom to neck bead	6-41/64	38	

NOTES:

1. Finishes are interchangeable in accordance with provisions of the order.
2. When lower glass weights are used, adjustment to make correct capacity shall be made in the "B" dimension.
3. Profiles similar to those illustrated for Exhibit Series 80-00 for Boston Round Bottles and Series 51-00 for Glass Jugs as shown in WPB Limitation Order L-103 shall be maintained consistent with "C" and "D" dimensions.
4. Containers shall be round.
5. Bottom stippling optional.

IN an effort to standardize sizes of containers and packages for household insecticides of the liquid spray type, with its claimed resultant saving in materials and labor, the National Bureau of Standards of the U. S. Dept. of Commerce late last month circularized about 600 manufacturers, distributors and users of household insecticides as well as glass container manufacturers with a proposed Simplified Practice Recommendation. The schedule of recommended standard stock sizes for containers and packages was drafted by a committee of the industry and Table I of the proposed recommendation was approved at a recent meeting of the Household and Industrial Insecticide and Disinfectant Manufacturers' Industry Advisory Committee of the War Production Board. Table I (retail packages) covers glass containers and Table II (industrial packages) covers steel drums.

The Bureau of Standards letter, sent out and signed by W. E. Braithwaite, Division of Simplified Practice, asked that those receiving the letter and the schedule of proposed sizes study the contents and if found satisfactory, signify approval by signing the accompanying form and returning to the Bureau. There are three sizes recommended in the retail package group: one pint, one quart and one gallon, the latter in bottle or jug style. Suggested industrial packages styles are: five gallon and 54 gallon steel drums.

The reasons for the simplification recommendation are explained in the following way: "In line with defense plans to simplify production in order to increase output and to assist in the program of the War Production Board to assure equitable distribution of glass containers for essential uses, the manufacturers of household insecticides have requested the cooperation of the Division of Simplified Practice of the National Bureau of Standards, in circularizing the industry for approval of the following proposed simplified practice recommendation for packages and containers in the Boston Round type of bottles and the one-gallon glass jug.

Table 2—Industrial Packages

Package size	Type of Container[1]
5	Steel Drum
54	Steel Drum

[1] Any suitable container that is available may be used for these two sizes for the duration of the war.

At the same time the recommendation was sent out to about 40 different associations representing distributors and users of household insecticides asking: (1) acceptance on behalf of the group represented; or (2) distribution of the recommendation to members for direct reply to the association and relay to the Bureau of Standard; (3 inform members of the existence of the proposed recommendation and suggest that they write to the Bureau for complete information if interested.

—— • ——

Urges American Castor Plantings

J. Edmund Good, vice-president of Woburn Degreasing Co., Harrison, N. J., addressing the Mid-American Chemurgic Council of the National Farm Chemurgic Council, meeting in Cincinnati, recently, pointed out that "ninety per cent of the imports upon which we formerly depended for our insecticide raw materials can be replaced with products from the American farm.

"Woburn Degreasing Company of N. J.", Mr. Good said, "has on file with the Commodity Credit Corporation firm offers to purchase many carloads of dehydrated castor leaves and other portions of the castor plant." These would be used in the manufacture of Woburn's castor-base insecticide, Mr. Good indicated. "We, of course, would prefer to make these purchases from American farmers" he said. However, he reported, this is not possible under the present set-up. Mr. Good then went on to point out the value of castor in insecticides, and told of the work his firm has done in the development of its product "Spra-Kast."

—— • ——

Plastic Foot Press?

A subscriber to *Soap & Sanitary Chemicals* is interested in buying plastic foot trays to replace hard rubber trays no longer available. The publishers will appreciate having the names and addresses of manufacturers of these containers.

Simple — Practical — Durable — Inexpensive

The 4 in 1 Applicator consists of but three parts:

1—A top quality sleeve-like wool pad;
2—A one piece hardwood block that needs no bolts, no nuts, no metal fastenings of any kind;
3—A hardwood threaded handle.

The 4 in 1 Applicator gives you more square inches of usable wool pad for your money.
The 4 in 1 Applicator insures perfect application of your floor waxes, seals and other finishes for every type of floor.

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A money-maker for alert jobbers calling on industrial plants and institutions.

★ Hygienically safe—fast and economical
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★ Tested and approved by millions of safe washups in plants throughout the country
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Other items in the Skotch Products line include dish-washing compounds, medium and heavy duty cleaners, liquid soap concentrate, special formula compounds and powdered soap dispensers.

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We do not sell insecticides. Our business is the manufacture of Sprayers. (Patented in the U. S. A. and foreign countries).

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Pacific Insecticide Institute Meets

THE Annual Meeting of the Pacific Insecticide Institute was held at the Claremont Hotel, Berkeley, Calif., on Tuesday, October 12. A business session was held in the morning at which time officers and new members of the Board of Directors were chosen for the coming year. John Paul Jones of Stauffer Chemical Company, San Francisco office, was selected as president with E. T. Doyle, of the Tobacco By-Products & Chemical Corp. as vice-president. Esler Johnson, Pacific Coast representative of the John Powell & Co., will act as temporary secretary of the Board of Directors. A successor to Dr. E. R. deOng, former secretary-treasurer will be chosen at a later date. Dr. deOng is now with OPA in Washington.

A luncheon attended by 65 members and guests was followed by an afternoon open meeting for the discussion of legislative matters—present and future. A paper was read by Jack Avery of the California State Bureau of Chemistry in the absence of Dr. Alvin J. Cox, Chief of the Bureau. Dr. Cox is confined to a hospital in San Francisco, after having undergone a serious operation. The paper was Dr. Cox's answer to a request of the Pacific Insecticide Institute that Economic Poisons Regulation No. 18, relative to products containing lead be rescinded. This paper was the subject of considerable debate during the afternoon and from the discussion, it is hoped that a more liberal interpretation of the regulation will be given. A hearing is being asked for.

The subject of coloration as now being discussed by Federal authorities, as well as the several states also came up for discussion.

At the luncheon a testimonial scroll was presented by the members of the Institute to Dr. A. J. Cox, the presentation being made by E. T. Doyle. Mr. Doyle commented on the many problems that had been solved through the cooperation of the Bureau of Chemistry and the manner in which Dr. Cox had handled his office during these many years. The united best wishes of the industry were extended toward Dr. Cox's speedy recovery and continued efforts in his present capacity.

Another highlight of the day was the presentation of a wrist watch, suitably engraved, to Esler Johnson, who served the Institute as president for two years and has since served as acting secretary. The watch was presented by Mr. Doyle together with a scroll.

◆

Hartell Zonite Adv. Mgr.

Ernest Zobain, advertising manager of A. C. Barnes Co. and Zonite Products Corp. has resigned to join the H. W. Kastor & Sons Advertising Co., New York. His successor, who will be in charge of advertising of all Zonite products is Eric Hartell. Mr. Hartell was formerly connected with the Forhan Products — division of Zonite, and since 1939 has been in charge of "Larvex" advertising.

◆

Kelite Adds Chemist

Kelite Products, Inc., manufacturers of sanitary supplies, has added chemist Lee S. Sinclair, Jr., to its laboratory staff at its main plant in Los Angeles. Mr. Sinclair, formerly in charge of the laboratory at Maytag Co., Newton, Iowa, is a graduate in chemical engineering from Iowa State University.

◆

Reports on Citrus Oils

J. L. Hindle, vice president of Standard Synthetics, Inc, New York perfuming materials manufacturers, has just returned from a trip to the West Coast. While in southern California he had considerable opportunity to get first hand information on the outlook for citrus oils. He reports that due to heavy government buying, lemon oil producers will have practically no carry-over stocks this year. New crop oil will not be available in quantity, he indicated, until about January or February. Orange oil production has been greatly increased this season, said Mr. Hindle, but the bulk of this increase has been readily absorbed due to the shortage of other citrus oils.

◆

Parish L & F Toronto Sales Head

Donald A. Parish has been named as the new sales manager of Lehn & Fink, Ltd., Toronto. Mr. Parish was formerly in charge of district sales. His predecessor, Norman Dahl, has joined the Vick Chemical Co., New York.

◆

J. B. Magnus On West Coast

J. B. Magnus, vice-president, Magnus, Mabee & Reynard, Inc., New York essential oil house, is on a six-weeks trip to the West Coast for a series of sales meetings with the company's newly appointed representatives there. Rowland C. Ringgold, of the MM&R staff will join Mr. Magnus in conducting the sales clinics.

◆

Erratum

"Antiseptic Velvo" powdered hand soap, made by Sanitary Soap Co., Paterson, N. J., has a claimed coefficient rating of 6½, not 2 as we stated in our Oct. issue.

◆

PCO Reports from the Front

Interesting glimpses of how the army operates a pest control service at the front are contained in a letter to Walter S. McCloud, from Art Price, a former employee of W. B. McCloud & Co., Chicago. "They have an extermination problem here on our island, mostly because of rats and bubonic plague," Price wrote. "There is a continuous service, conducted much the same as we operated at home. They have the same type of mixers, use the same chemicals, etc. It smelled like it, too, with phosphorus paste, meat and different grains . . . . The army cooperates with civil authorities by trapping the rats and it is our function to immerse them in kerosene and bring them to the lab for examination . . . . They have also introduced the mongoose on the island to help get rid of the rats."

Armstrong's SKALO FIGHTS FILTH

Today, up-to-the-minute organizations eliminate toilet room filth by going beyond simple surface cleaning. SKALO is a specialized cleansing aid, prepared to "blitz" the hidden pockets responsible for offensive toilet room odors.

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• HAND AND MACHINE DISH WASHING COMPOUNDS •

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Discuss War-Time Problems At Annual PCO Meeting

OCCUPYING the major share of the discussion at the National Pest Control Association meeting, Oct. 25-27, at the Hotel Statler, St. Louis, Mo., were such diverse topics as insect and rodent damage in war-time, substitute materials and labor problems. An attendance of 400 were present for this the 11th annual meeting.

The following officers and directors were elected: president, George R. Elliott, Ransford Insecticide Co., Worcester, Mass.; regional vice-presidents: East, Herbert Meyer, Fumex Sanitation Co., Jamaica, N. Y.; West, Albert E. Akers, Rose Exterminator Co., Cleveland Heights, O.; California, Ernest G. Mills, Pacific Exterminator Co., San Francisco; Northwest, Max J. Levy, Twin City Exterminating Co., St. Paul; South, Otto Orkin, Orkin Exterminating Co., Atlanta; Southwest, Jerome Howell, Howell Termite Control Co., Houston, Tex.; secretary, William O. Buettner, Buettner Pest Control Co., Brooklyn; treasurer, Robert C. Yeager, Rose Exterminator Co., Cincinnati; three-year directors: Sidney Wimmer, Majestic Chemical & Exterminating Co., New York; Henry Turrie, Wil-Kill Exterminating Co., Inc., Milwaukee; Glenn Burnett, Getz Exterminators, Inc., Atlanta; Robert B. Loibl, Sr., Master Pest Control Co., Los Angeles; Edwin Sameth, Western Exterminating Co., Newark, N. J.; Abe Krawcheck, Orkin Exterminating Co., Birmingham, Ala.; J. Wilfred Gunn, Hollywood Termite Control Co., Los Angeles; two-year directors: Bert Lewis, Lewis Pest Control, Muncie, Ind.; E. N. Goldey, Bliss Exterminator Co., New York; Louis Gatto, Louis Gatto Co., Beaver Falls, Pa.; V. N. Montgomery, Montgomery Pest Control Co., San Francisco; Mrs. Ada Williams, Ada Williams Pest Control, Albuquerque, N. Mex.; William McCain, Extermital Chemicals, Inc., Dayton, O.; Joseph Hahne, Smith Exterminating Co., Omaha; one-year directors: John W. Anderson, Anderson Exterminating Co., Corpus Christi, Tex.; Morton S. Prescott, Protex Service, Chicago; Ray V. Bechtel, Aristo Exterminating Co., Detroit; Martin Meyer, Theodore Meyer Est., Philadelphia; Mrs. R. W. Laing, Laing Exterminating Co., Cleveland; J. Harvey Sturgeon, Sturgeon Pest Control Co., Louisville; A. A. Beliveau, Alhambra, Calif.; Canadian director, P. Henry Maheu, Mysto, Inc., Montreal, Canada.

Stauffer Subsidiary Is Fico

Fico division of the Stauffer Chemical Co. of Florida, Inc., is the new name of Florida Insecticide Co., Apopka, Fla., wholly owned subsidiary of Stauffer Chemical Co.

WASHBURN FINISHES

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SANITARY PRODUCTS

their manufacture, testing and use

By Leonard B. Schwarcz

CONTENTS

Sanitary Products Industry — reviewing the type firms in the industry, the products they manufacture, and their annual value.

Discovery of Bacteria—historical background on the germ theory of infection.

Principles of Disinfection — the role of chemical preparations in disinfection; definition of disinfectant terms.

Coal Tar Disinfectants—a review of their manufacture and use.

Cresol Compounds — Liquor Cresolis Compositus, B.A.I. Compound, petroleum-type cresylics.

Pine Oil Disinfectants—manufacture, properties and uses.

Hypochlorites—manufacture, properties and uses of chlorine disinfectants.

Formaldehyde—its applications in the disinfectant field.

Oil Soaps—manufacture, sale and use of jelly soaps, green soaps, auto soaps, floor scrubbing soaps, etc. Special attention is given to manufacture of oil soaps from fatty acids.

Liquid Soaps—The case for liquid soaps for washroom use. A review of raw materials, manufacturing methods, use, etc., with special attention to the problems of clarity, concentration, dispensing equipment, etc.

Soap Dispensers—a review of the common types of liquid and powder soap dispensers, push-in, push-up, tilt, goose-neck, pullman, etc.

Floor Waxes—A review of raw materials for floor wax manufacture and a study of manufacture and application of liquid waxes, paste waxes, water-emulsion waxes.

The Insect Problem—A review of the general role which insecticides must fill in man's battle against the insect world.

Pyrethrum Insecticides—The important place that pyrethrum has taken in the manufacture of non-poisonous insecticides. Manufacture, testing and use of pyrethrum insecticides are reviewed.

Rotenone Materials — Occurrence and toxicity of rotenone, and its use as an insecticidal raw material. Comparisons with pyrethrum on toxicity and deterioration.

Synthetic Insecticides—The most complete review yet published of the chemical nature, characteristics, and use in insecticides of a dozen synthetic materials.

Activators—The action of activators in stepping up insecticide toxicity. A study of activators which are in current use.

Roach Control — Roach powder formulation. The role of sodium fluoride and borax.

Bedbug Liquids—Control methods and special preparations.

Livestock Sprays—Manufacture and use of cattle sprays, with particular emphasis on repellency, application and choice of oil base.

Sprayers—A review of hand, continuous and electric types. Applicators for aerosols are also discussed.

Moth Preparations — Use of paradichlorbenzene, naphthalene, cedar preparations, etc., in moth control. Cautions on labeling.

Deodorant and Urinal Blocks—Para vs. naphthalene blocks. Pressed vs. molded blocks. Perfuming, wrapping, etc.

Labeling and Packaging—The most complete review ever published of the obligations of the sanitary products manufacturer under the Insecticide Act of 1910, The Caustic Poisons Act, The Federal Trade Act, the Food, Drug and Cosmetic Act and the various state laws. Typical decisions of the AMA and the FDA in reviewing offending labels are presented, along with sample labels of approved content.

Appendix—Complete text of Insecticide Act of 1910, Caustic Poisons Act, Peet-Grady Test for Insecticides, FDA Method for Disinfectant Testing, Mercury Reduction Method, Seil Method, NAIDM Specifications, list of approved antidotes.

SANITARY PRODUCTS has standard high-grade book binding, cloth and board covers, 6 x 9, 312 pages. Priced at $5.00 per copy. Check *must accompany* order. Orders for books to be sent on approval *cannot be accepted*, but the usual return privilege will be accorded where copies are returned unmarred within 10 days. Owing to present conditions, the first edition must be limited. Accordingly an *early order* accompanied by check is suggested.

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Military Ant Control Problem

The serio-comic aspect of ant control militarily was explained in a recent article: "The Ant as a Military Problem" in *Fifth Service News*. (The article was reprinted by *Readers Digest* in their November issue.) Among other U. S. Army regulations, there is one that requires ant extermination preparations to be obtained from the Quartermaster if "the ant to be exterminated was in the building." For ant extermination "outside the building," the insecticide must come from Engineering. What then was the dilemma of a medical inspector at a Georgia air base who could not precisely determine whether the ants were to be exterminated "in the building" or "outside the building" since they appeared to be going in circles or wandering in and out of the building at random.

"Such ant tactics," wrote the officer, "are very confusing and could result in a Quartermaster ant being exterminated by an Engineering poison or an Engineering ant being exterminated by a Quartermaster poison, which would be contrary to the regulations and would probably lead to extensive investigation and lengthy letters of explanation." His solution was admirably simple: "in view of the fact that Quartermaster poison has been found to kill an ant just as dead as Engineering poison, and vice versa, request is made that your office (medical supply office) draw identical poisons for issue to this office from both Engineering and Quartermaster and mix same so that there will be no way of knowing which poison killed the ant."

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Professional Exterminators Meet

The Professional Exterminators Association at its first fall meeting appointed a committee on formulas with A. M. Weiss as chairman and Nicholas Harvey as vice-chairman and then went into a discussion of rodenticide formulae. At the meeting which was held October 11th, at the Hotel Commodore, New York, it was decided to discuss the make-up of new and tried formulae at succeeding meetings. The next meeting of the Association will be held Monday, Nov. 8th, which will be a joint meeting with the New York Pest Control Association.

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Pacific Insecticide Meeting

The Pacific Insecticide Institute and the Agricultural and Fungicide Association will sponsor a joint meeting at the St. Francis Hotel, San Francisco, November 17 and 18, to afford an opportunity for West coast manufacturers of insecticides to discuss their supply problems with representatives of the government and producers of insecticide raw materials. Philip H. Groggins of the WFA, Warren H. Moyer of the WPB and a representative of the Agricultural Chemicals Section of the OPA are expected to attend the West coast meeting.

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Nontoxic Disinfectant

For curbing germ growth effectively under a wide variety of conditions, a new disinfectant called Perm-Astic-Ramplex, is offered by the Rampel Chemical Co. of New York.

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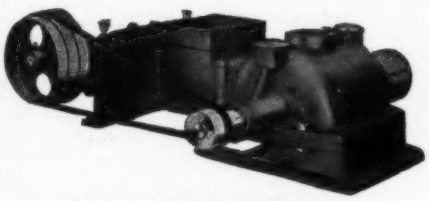

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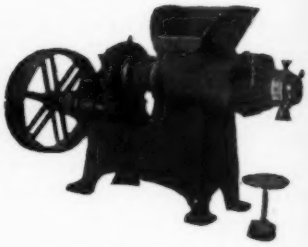

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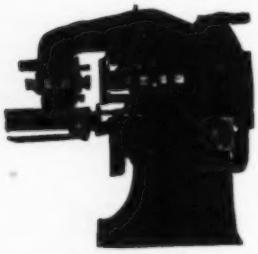

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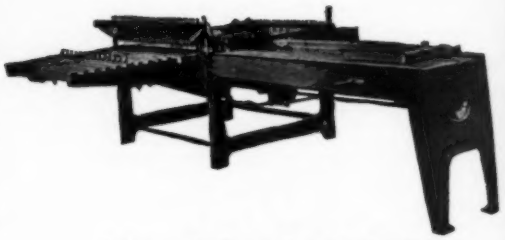

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Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, and March 3, 1933, of Soap & Sanitary Chemicals, published monthly at New York, N. Y., for October 1, 1943.

State of New York, County of New York.

Before me, a Notary Public in and for the State and County aforesaid personally appeared Grant A. Dorland, who, having been duly sworn according to law, deposes and says that he is the Business Manager of Soap & Sanitary Chemicals and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the months preceding the date shown above is ——. (This information is required from daily publications only.)

GRANT A. DORLAND,
Business Manager.

Sworn to and subscribed before me this 21st day of September, 1943.

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Seed Disinfectant

To immunize seed against attack by plant pests and microorganisms, the seed is treated with an organic mercury compound of the formula $CH_3OCH_2CH_2HgOCH_2C_6H_5$, or compounds of similar structure. V. Migrdichian, to Am. Cyanamid Co. Canadian Patent No. 415,275.

Repellency of Cattle Sprays

A series of tests on fly repellent characteristics of various cattle sprays are reported in an article in the February, 1943 issue of the *Journal of Economic Entomology*, pages 23-32. The authors are A. O. Shaw, Roger C. Smith, F. W. Atkeson, H. C. Fryer, A. R. Borgmann, and F. J. Holmes, of the Kansas Agricultural Experiment Station. A number of selected commercial sprays were tested, together with fly repellents of known composition. All of the sprays tested reduced the fly counts so markedly that their repellent action was readily evident. A spray based on "Thanite" was reported to be the most repellent spray tested. Another article by the same authors in the same issue, pages 33-44, deals with techniques for conducting fly repellency tests on cattle.

Cockroach Control

To exterminate cockroaches, a cloth having a nap surface on one side is used with a dry powdered poison such as sodium fluoride or an arsenic compound distributed throughout the nap surface, and an insect lure such as sugar. The latter is placed somewhat below the outer surface of the nap. C. H. Closs. U. S. Patent No. 2,315,772.

Mothproofing Composition

A mothproofing composition contains a water-soluble guanidine salt of an aliphatic monocarboxylic acid such as dixylyl guanidine acetate. David W. Jayne, to Am. Cyanamid Co. Canadian Patent No. 415,273.

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Tale Ends

NOT without its humorous slant was the recent W. P. B. order removing restrictions on the production of soap machinery. It seems that everybody and his brother received a copy of the order from W. P. B. except the three leading manufacturers of soap machinery, each of whom has been in business for fifty years or more. When questioned by our reporter about the new order, each answered in turn: "What order?"

* * *

Sh-h-h-h-h! During the past month, we have not heard soap rationing mentioned once. Maybe it's a dead duck. Who can tell?

* * *

D.D.T., which being translated means dichloro - diphenyl - trichloroethane, which is the semi-popular chemical designation for the insecticide raw material which of late has had the industry and the Department of Agriculture all agog,—and which is used in our Army and Navy louse powder, and which may really turn the insecticide situation, agricultural as well as household, upside down,—well, anyway, D.D.T. has been okayed as safe toxicologically by the National Reasearch Council for sprays, dusts and aerosols, says the latest dope on the subject.

* * *

The big word in Washington today is "realistic." Our thinking and planning for the post-war era must be "realistic," say the dream boys of the bureaus. But when the post-war era arrives and with it the cold, grey dawn, we fear that they will appreciate more clearly in the midst of the hangover headache the true meaning of "realistic."

* * *

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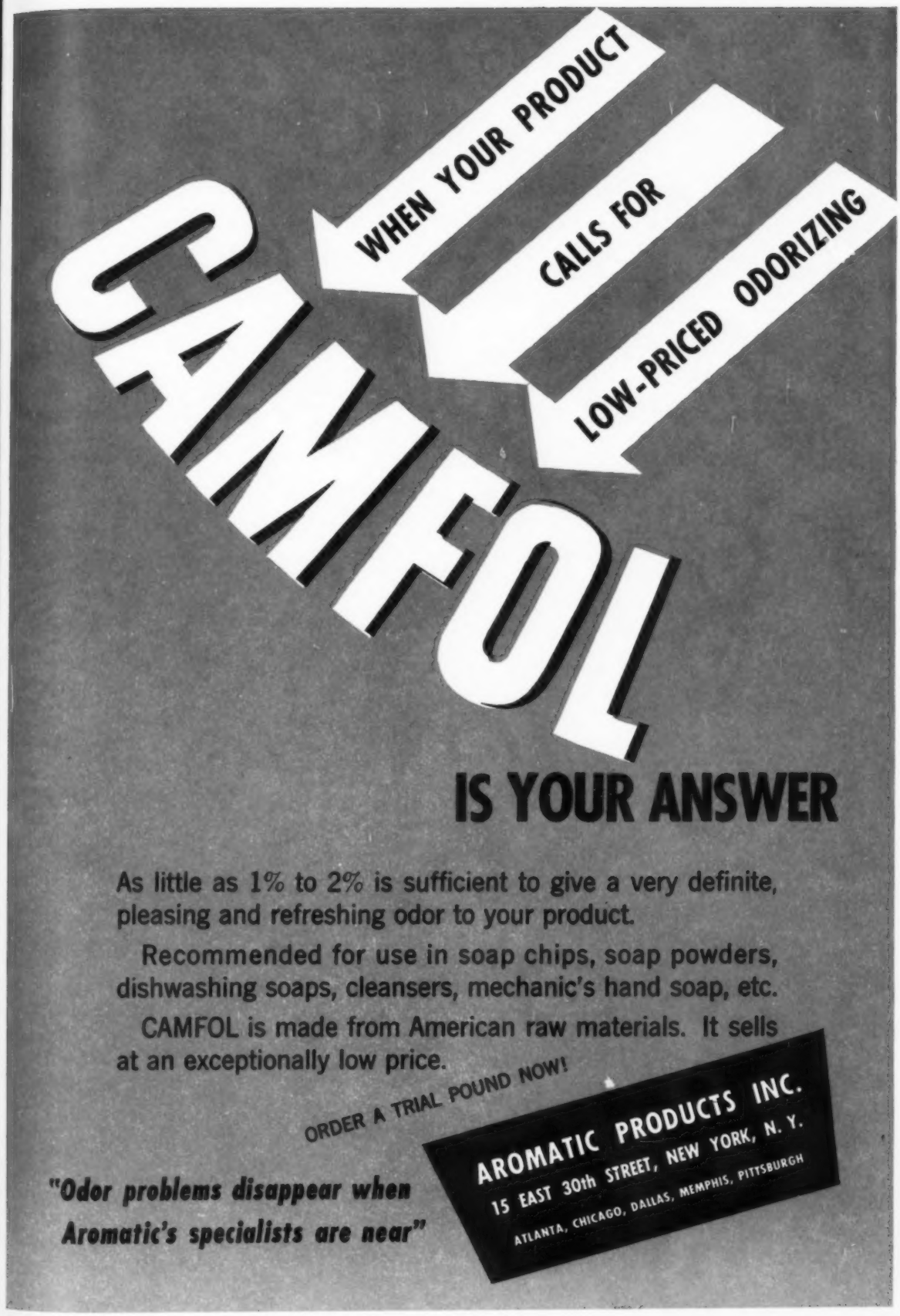
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